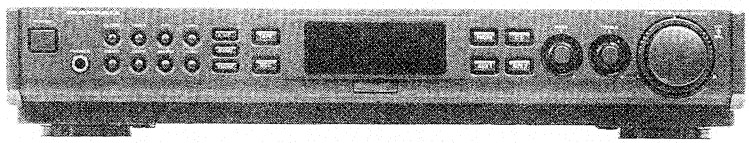
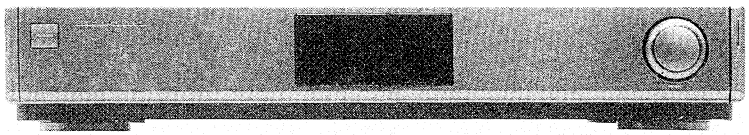
Service Manual

75SR1010 / 1B / 2B
75SR1020 / 1A / 2A

Stereo receiver





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marantz®

model SR1010 / SR1020

First issue : 1993 / 8

4822 725 51035

PCS 71 187

MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ company has created the ultimate in stereo sound. Only **original MARANTZ parts** can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ equipment are generally available at our National Marantz Subsidiary or Agent.

MARANTZ EUROPE B.V.
P.O. Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands
Phone : +31-40-732241
Fax : +31-40-735578

ORDERING PARTS

Parts can be ordered either by mail or by telex. In both cases, the correct part number has to be specified. The following information must be supplied to eliminate delays in processing your order:

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which the part is required
5. Way of shipment
6. Signature: any order form or telex must be signed, otherwise such part order will be considered as null and void.

ADDRESSES

AUSTRALIA
MARANTZ AUSTRALIA
Figtree Drive
Australia Centre
Homebush, NSW 2140
AUSTRALIA

AUSTRIA
MARANTZ
Hietzinger Kai 137a
1130 Wien
Austria

BELGIUM
MARANTZ EUROPE B.V.
Div. Benelux
P.O.Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands

CHILE
MARANTZ DIVISION OF
PHILIPS S.A.
Av.Santa Maria 0760
Casilla 2687
Santiago
Chile

DENMARK
MARANTZ
Horsvinget 5
2630 Tastrup
Denmark

FINLAND
MARANTZ
Kuortanegatan 1
00520
Helsingfors 52
Finland

FRANCE
MARANTZ FRANCE
4 Rue Bernard Palissy
92600 Asnières
France

GERMANY
MARANTZ GERMANY GmbH
Kleine Heide 12
Postfach 4802
Halle-Westfalen
Germany

GREAT BRITAIN
MARANTZ HiFi UK Ltd.
Kingsbridge House
Padbury Oaks
575-583 Bath Road
Longford Middlesex UB7 OEH,
U.K.

GREECE
ADAMCO ELECTR. SA
P.O.Box 21025
Hippocratus Str. 188
Athens 11471
Greece

ITALY
MARANTZ ITALIANA SPA
Piazza IV Novembre 3
20124 Milano
Italy

JAPAN
MARANTZ JAPAN INC.
35-1, 7-chome, Sagamiono
Sagamihara-shi, Kanagawa
Japan

KUWAIT
AL ALAMIAH ELECTRONICS
P.O.Box 8196
Salmiah
22052 Kuwait

NETHERLANDS
MARANTZ EUROPE B.V.
Div. Benelux
P.O.Box 80002
Building SFF 2
5600 JB Eindhoven
The Netherlands

NORWAY
MARANTZ
Postboks 7034
Assiden
3007 Drammen
Norway

PORTUGAL
COREL
Av. da Liberdade
211-2 Esq.
1200 Lisboa
Portugal

SAUDI ARABIA
AL ALAMIAH ELECTRONICS
P.O.Box 5954
University Street
Riyadh 11432
Saudi Arabia

SOUTH AFRICA
MARANTZ S.A.
10 Bond Street
Randburg 2194
P.O. Box 7703
Johannesburg 2000
South Africa

SPAIN
MARANTZ SPAIN
Martinez Villergas 2
Apartado 2065
Madrid 28027
Spain

SWEDEN
MARANTZ
Box 1324
17125 Solna
Sweden

SWITZERLAND
MARANTZ SWITZERLAND
Postfach
8010 Zürich-Müllingen
Switzerland

TRADING
MARANTZ TRADING
P.O.Box 20008
Building SFF 2
5600 JB Eindhoven
The Netherlands

All of the above locations are fully equipped to take care of your total service needs or can advice you. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country.
In the event that there is no service location listed for your country, please contact the nearest facility for the necessary assistance.

In case of difficulties, do not hesitate to contact the Technical Department at above mentioned address.

1. TECHNICAL SPECIFICATIONS (DIN)

FM TUNER SECTION

Frequency range	87.5–108 MHz
Sensitivity DIN (Mono/Stereo)	1.0/25 μV
S/N (Mono/Stereo)	76/68 dB
T. H. D.	0.3/0.6%
Selectivity at 98 MHz (±300 kHz)	60 dB

MW TUNER SECTION

Frequency range	531–1602 kHz
Sensitivity DIN (S/N 20 dB 30% 999 kHz)	500 μV
S/N at 999 kHz	50 dB

LW TUNER SECTION

Frequency range	152–282 kHz
Sensitivity DIN (S/N 20 dB 30% 209 kHz)	1500 μV

AMPLIFIER SECTION

Power output	DIN 8Ω	50 W
	RMS 8Ω	45 W
IHF Dynamic power 8Ω/4Ω/2Ω		64 W/85 W/92 W
T.H.D. at 8Ω rated RMS output		0.05%
Damping factor		100
Input sensitivity	: PHONO	3.5 mV/47 kΩ
	: CD/TV/CDV/VCR/TAPE	220 mV/40 kΩ
S/N (IHF-A)	: PHONO	73 dB
	: CD/TV/CDV/VCR/TAPE	80 dB

POWER REQUIREMENTS

/2A/2B version	230 V AC, 50/60 Hz
/1A/1B version	115/230 V AC, 50/60 Hz

DIMENSIONS

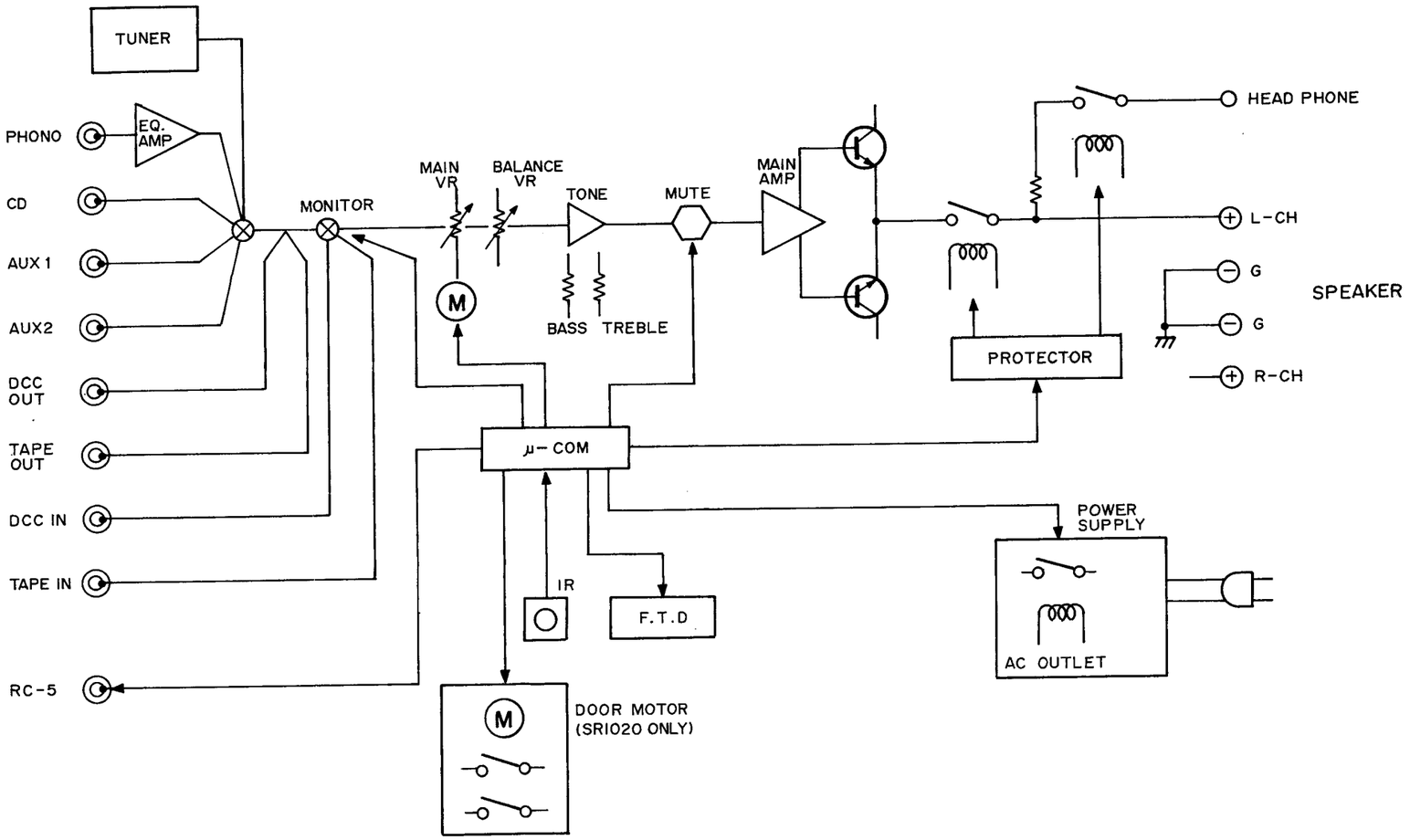
Width	422 mm
Height	76 mm
Depth	317 mm
WEIGHT	5.9 kg (SR1010)
	6.0 kg (SR1020)

SUPPLIED ACCESSORIES

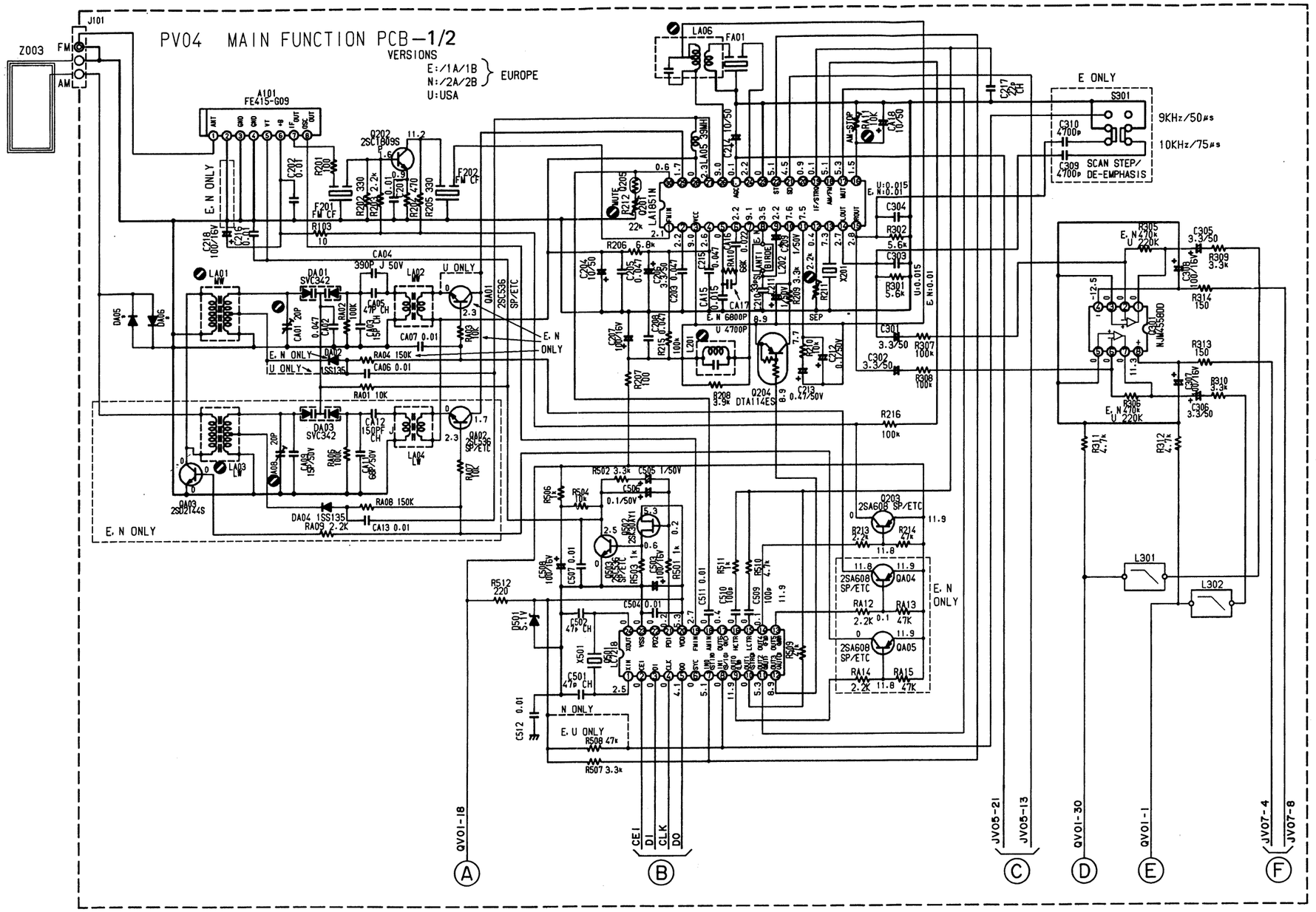
Remote controller (RC1020SR) × 1
Batteries (Size "AAA", R03) × 2
FM antenna × 1
AM loop antenna × 1

Specifications subject to change without prior notice.

2. BLOCK DIAGRAM

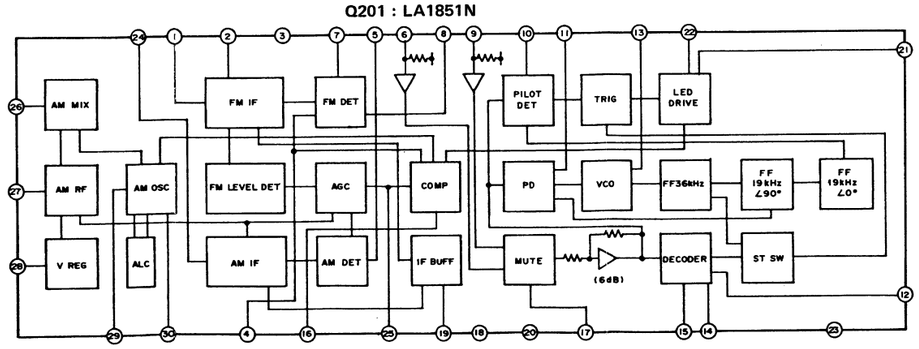


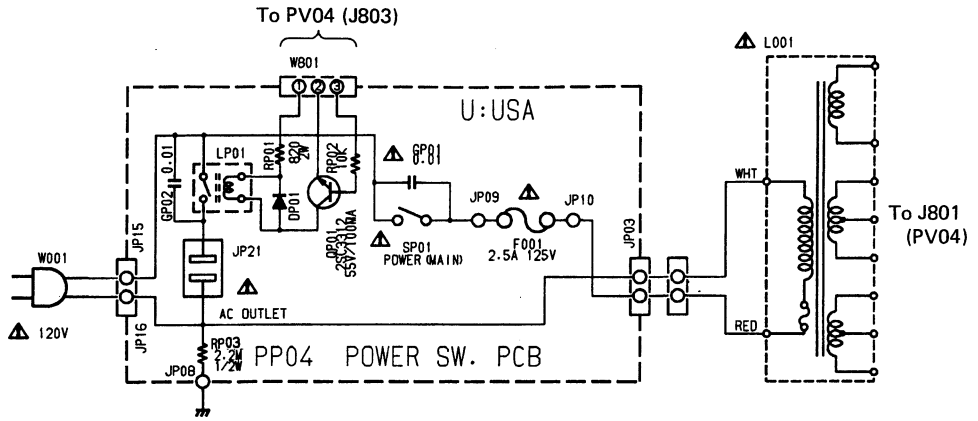
3. SCHEMATIC DIAGRAM AND PARTS LOCATION (Pattern side)

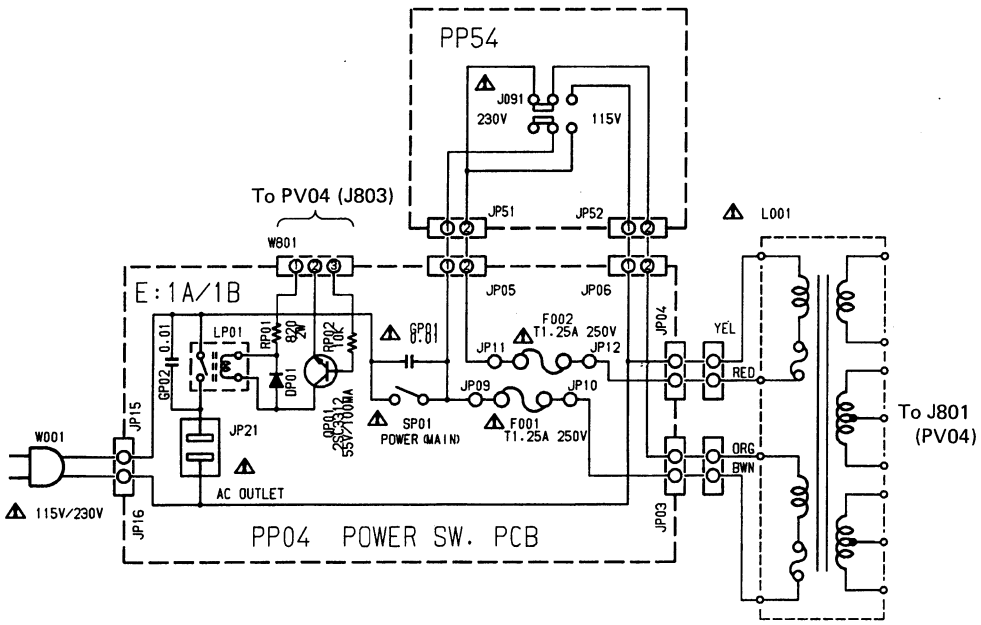


NOTE ON SAFETY :
Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠ . Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

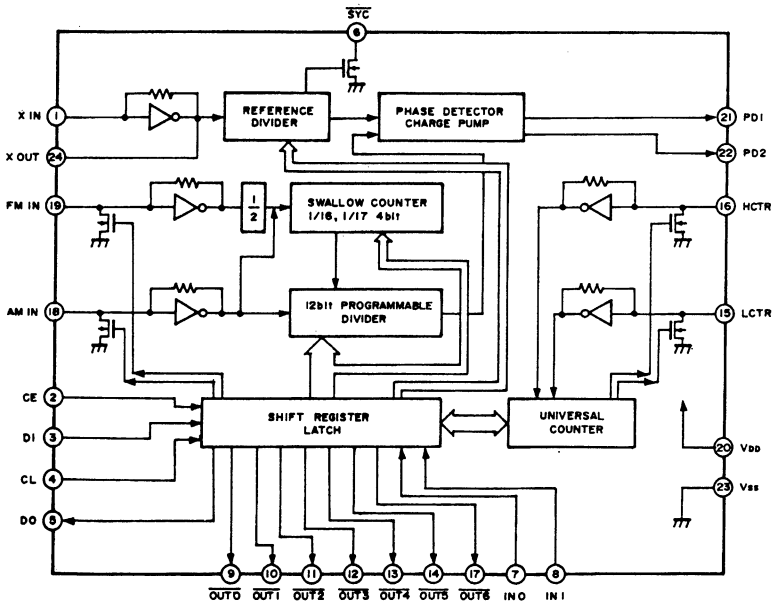
Q201 : LA1851N

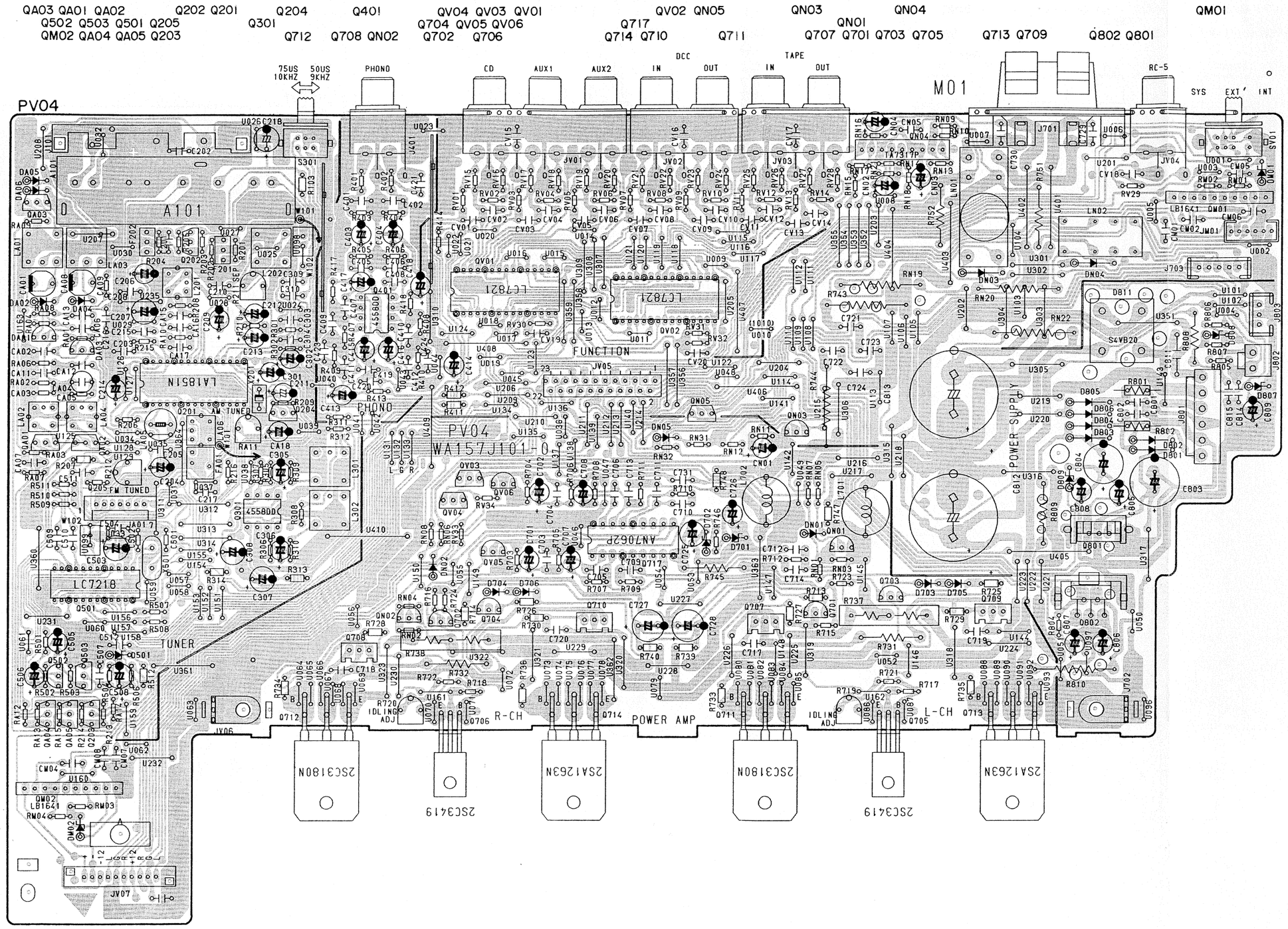



To PV04 (J803)
W801
U:USA
L001
WHT
RED
To J801
(PV04)
W001
120V
JP15
JP16
JP21
AC OUTLET
JP03
JP09
JP10
SP01
POWER (MAIN)
F001
2.5A 125V
LP01
RP01
820
RP02
1K
GP81
0.01
GP02
0.01
DP01
RP03
2.2M
1/2W
JP08
PP04 POWER SW. PCB


PP54
J091
230V
115V
To PV04 (J803)
W801
JP51
JP52
L001
E:1A/1B
JP05
JP06
JP04
F002
T1.25A 250V
JP11
JP12
YEL
RED
ORG
BWN
To J801
(PV04)
W001
115V/230V
JP15
JP16
JP21
AC OUTLET
JP03
JP09
JP10
SP01
POWER (MAIN)
F001
T1.25A 250V
LP01
RP01
820
RP02
1K
GP81
0.01
GP02
0.01
DP01
PP04 POWER SW. PCB

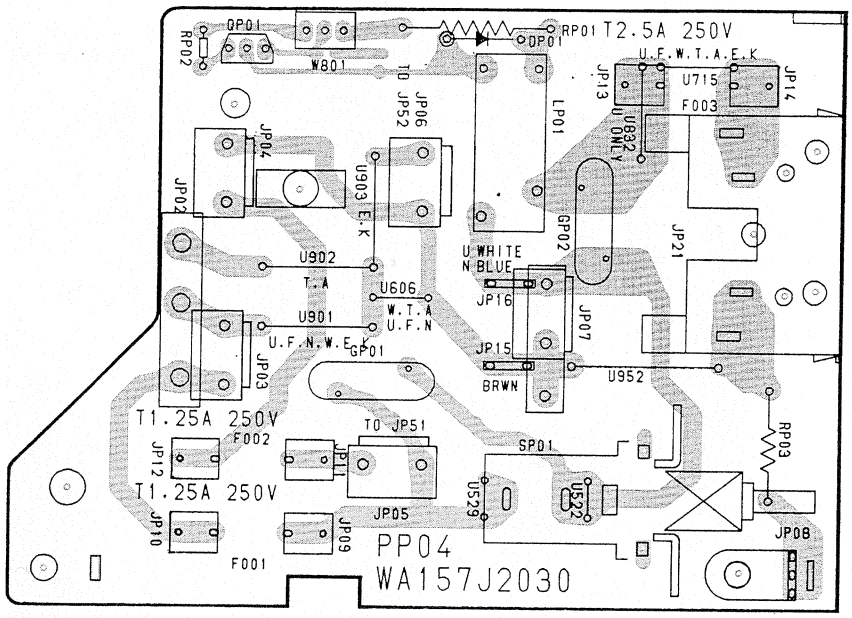
Q501 : LC7218


SVC
X IN
X OUT
FM IN
AM IN
CE
DI
CL
DO
REFERENCE DIVIDER
PHASE DETECTOR CHARGE PUMP
SWALLOW COUNTER 1/16, 1/17 4bit
12bit PROGRAMMABLE DIVIDER
SHIFT REGISTER LATCH
UNIVERSAL COUNTER
PD1
PD2
HCTR
LCTR
VDD
VSS
OUT0
OUT1
OUT2
OUT3
OUT4
OUT5
OUT6
IN0
IN1


PV04
A101
LA1851N
LC7218
TUNER
LC7821
FUNCTION
PV04
WA157J101-0
PHONO
R-CH
L-CH
POWER AMP
POWER SUPPLY
AN7062P
S4VB20
2SC3180N
2SA1263N
2SC3419
M01
RC-5
SYS
EXT'
INT
CD
AUX1
AUX2
IN
OUT
TAPE
DCC
PHONO
75US 10KHZ
50US 9KHZ
IDLING ADJ
Q502 Q503 Q501 Q205
QM02 QA04 QA05 Q203
QA03 QA01 QA02
Q202 Q201
Q204
Q301
Q401
Q712 Q708 QN02
QV04 QV03 QV01
Q704 QV05 QV06
Q702 Q706
QV02 QN05
Q717
Q714 Q710
Q711
QN03
QN01
QN04
Q707 Q701 Q703 Q705
QM01
Q713 Q709
Q802 Q801

QP01

PP04



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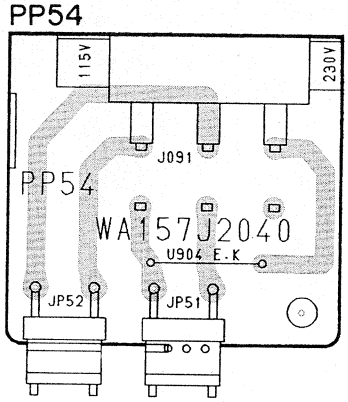

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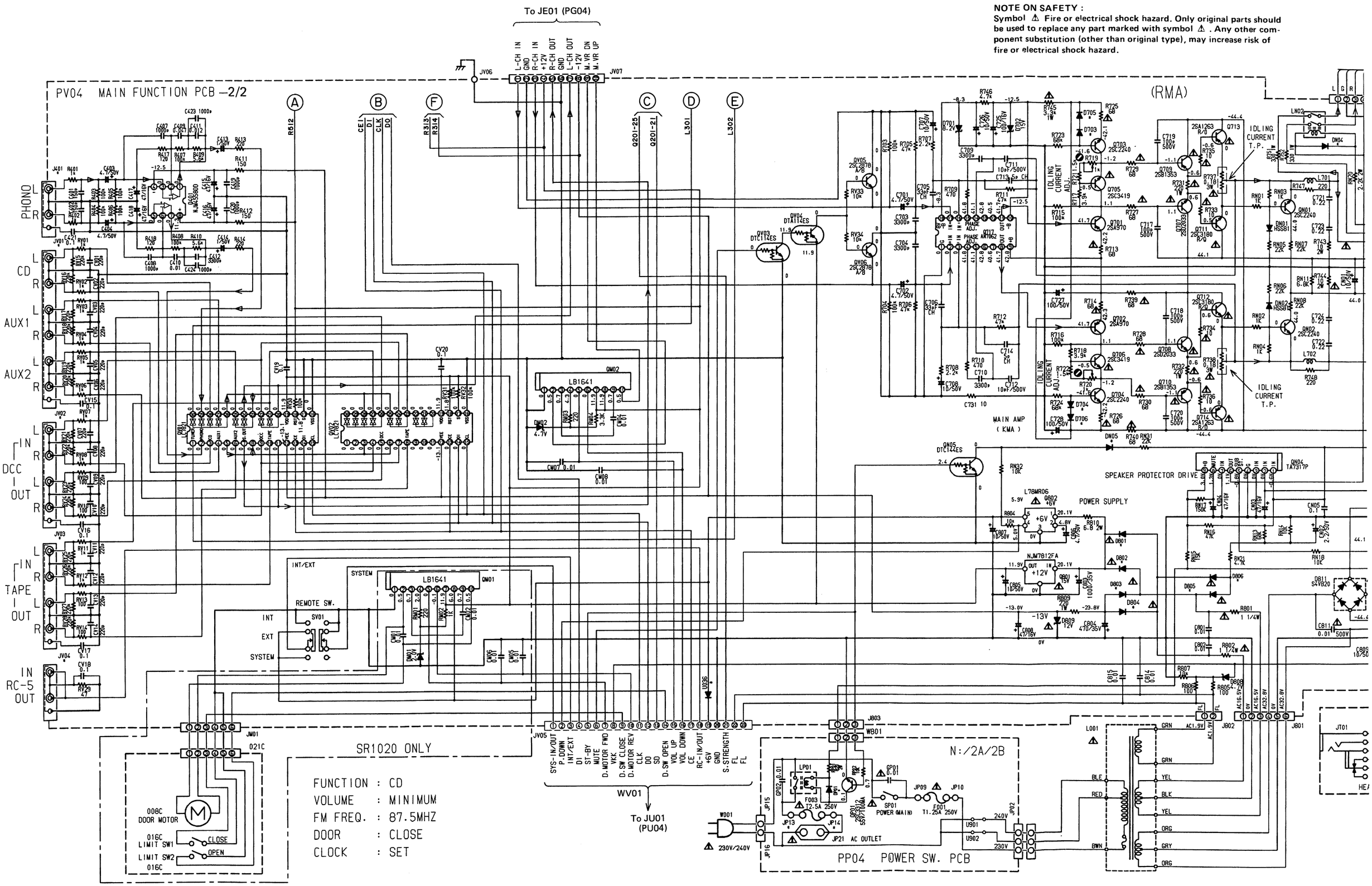

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B –2/2

To JE01 (PG04)

JV06 JV07 L-CH IN GND R-CH IN +12V R-CH OUT GND L-CH OUT -12V M.VR DN M.VR UP

(RMA)

MAIN AMP (KMA)

IDLING CURRENT ADJ.

IDLING CURRENT T.P.

PHASE ADJ.

SPEAKER PROTECTOR DRIVE

POWER SUPPLY

L78MR06 +6V

NJM7812FA +12V

SR1020 ONLY

FUNCTION : CD
VOLUME : MINIMUM
FM FREQ. : 87.5MHZ
DOOR : CLOSE
CLOCK : SET

INT/EXT SYSTEM REMOTE SW. INT EXT SYSTEM

LB1641

SYS-IN/OUT P.DOWN INT/EXT DI ST-BY MUTE D.MOTOR FWD VKK D.SW CLOSE D.MOTOR REV CLK DO SD D.SW OPEN VOL UP VOL DOWN CE RC-IN/OUT +6V GND S.STRENGTH FL FL

WV01 To JU01 (PU04)

N:/2A/2B

PP04 POWER SW. PCB

F003 T2.5A 250V

F001 T1.25A 250V

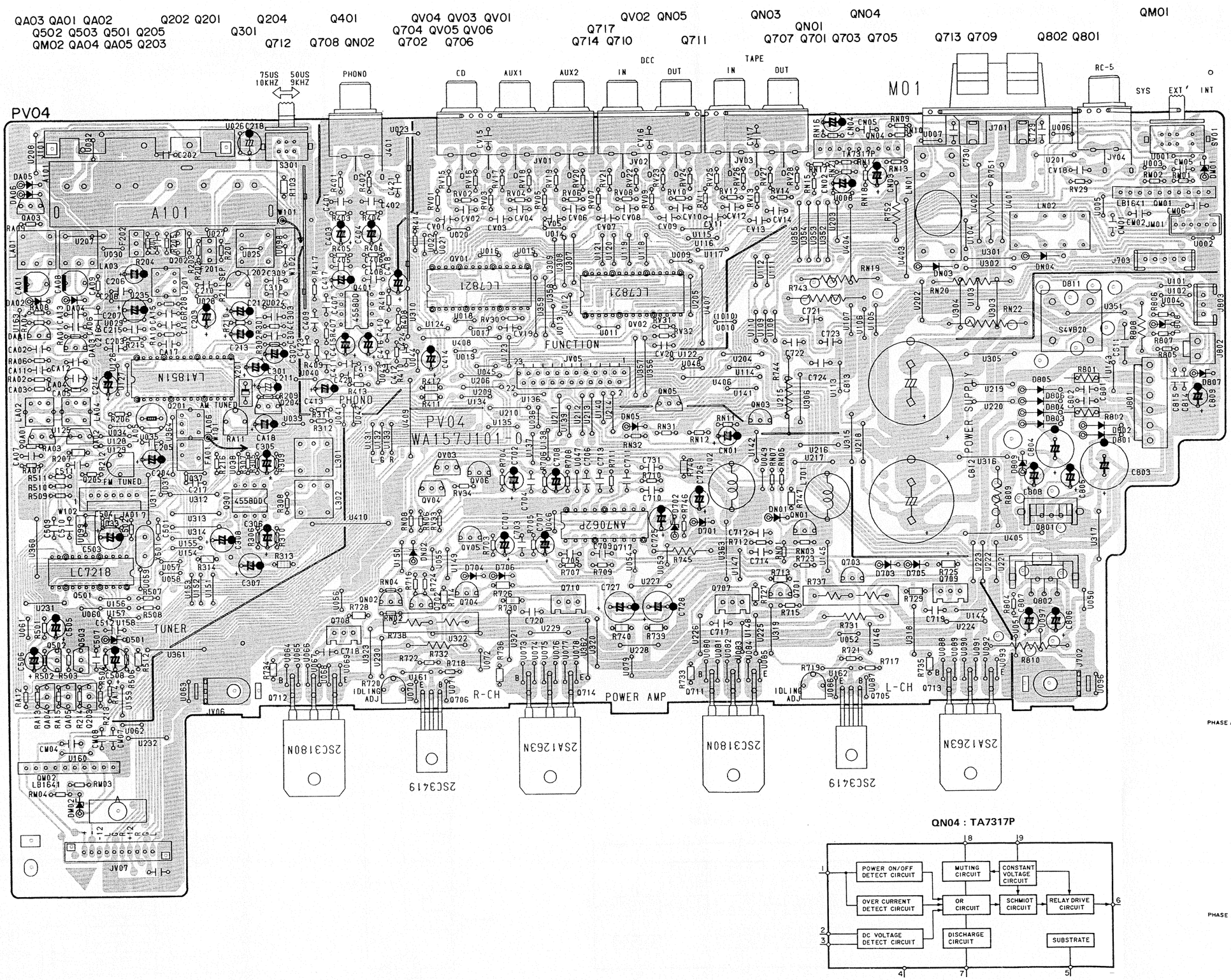
SP01 POWER (MAIN)

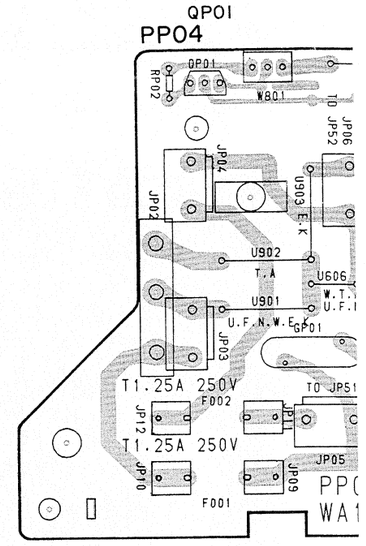
JP21 AC OUTLET

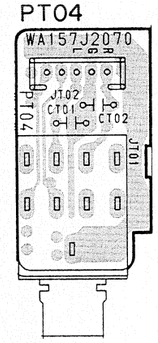
230V/240V

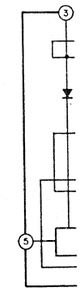
PT04 HEADPHONE PCB

WV02 L G R J703 J701 SPEAKER









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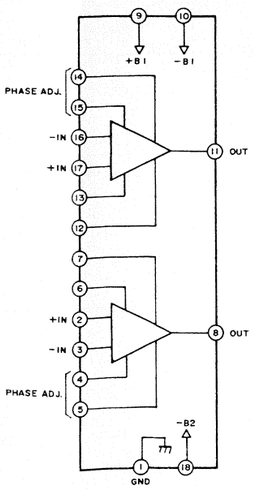

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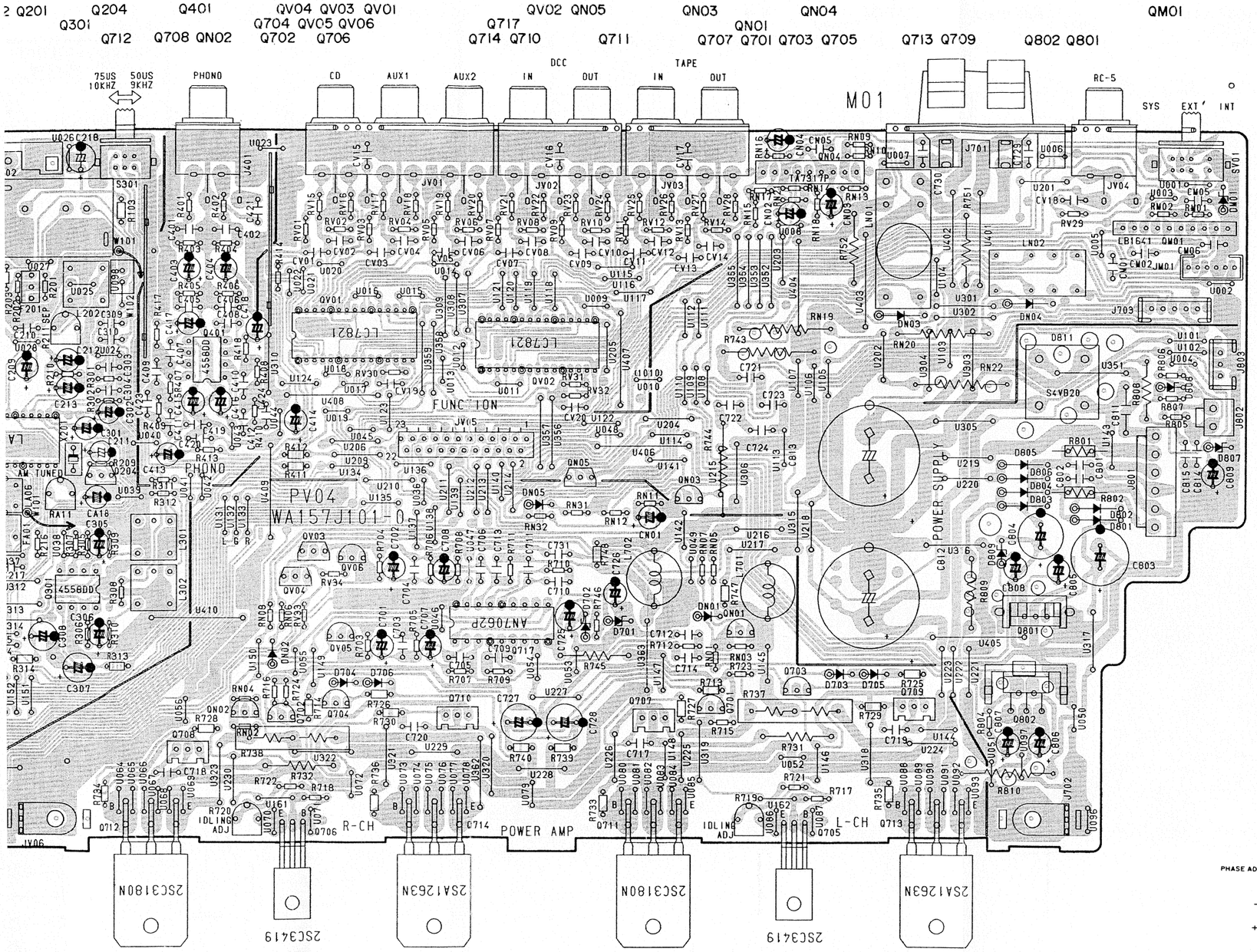
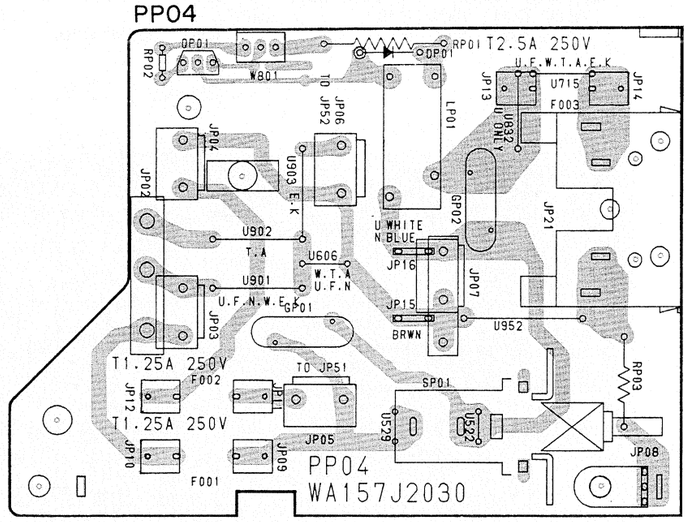
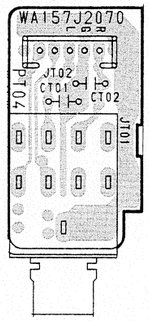


QP01

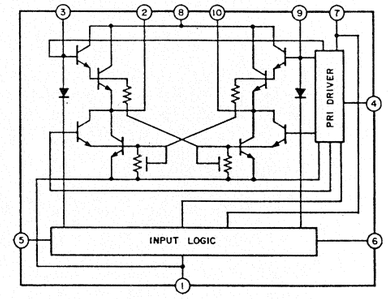
PP04



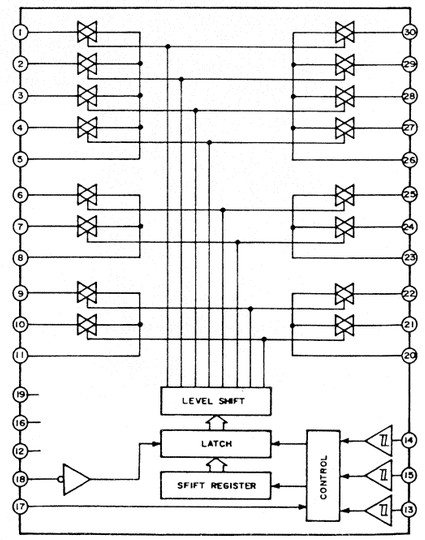
PT04



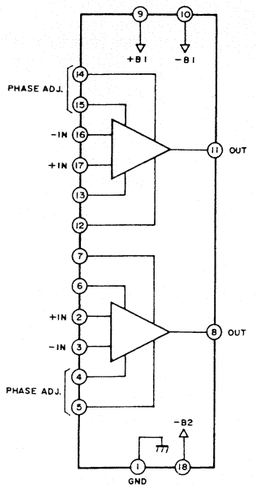
QM01, QM02 : LB1641



QV01, QV02 : LC7821



Q717 : AN7062



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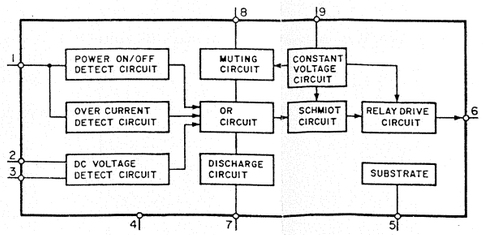
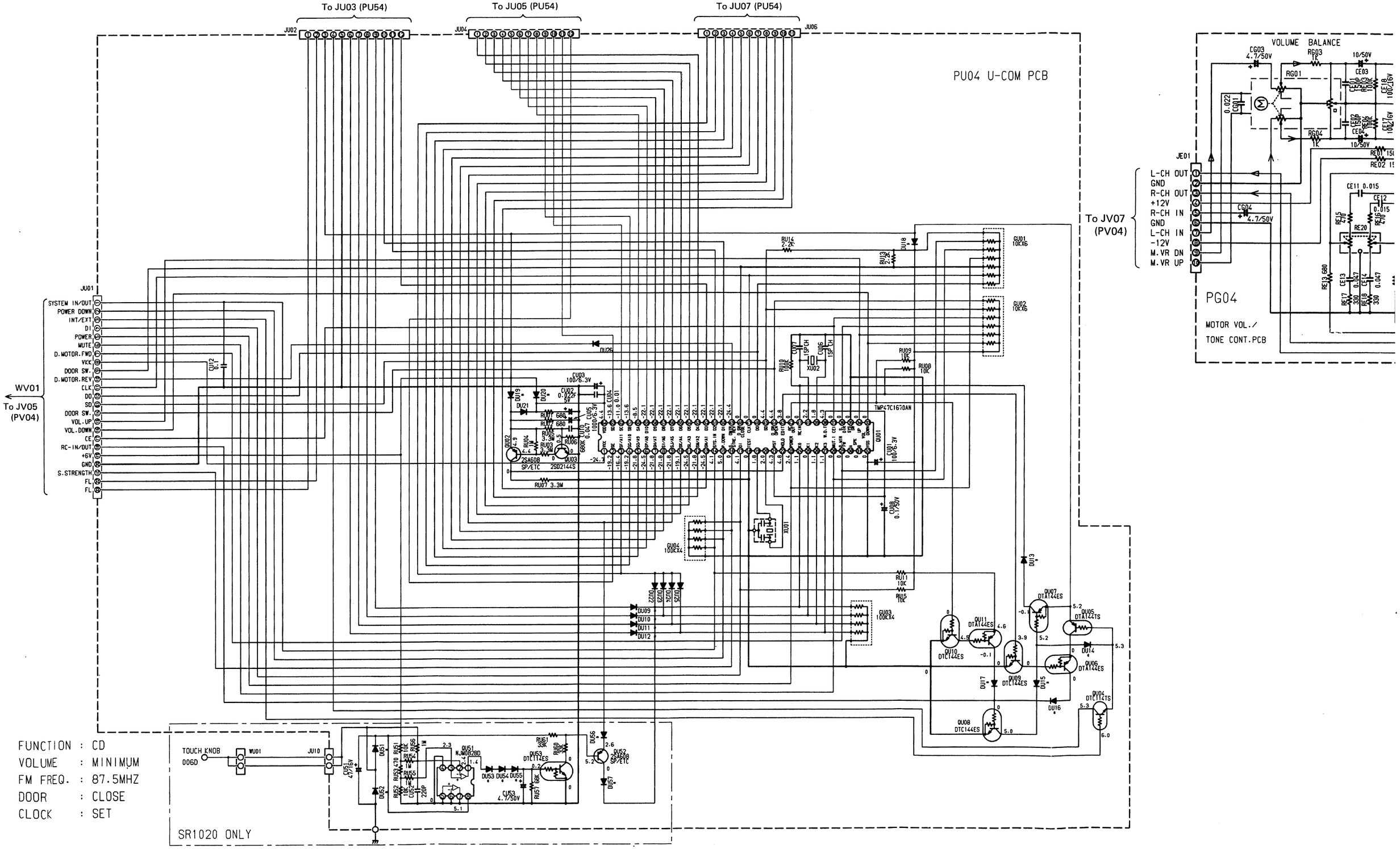
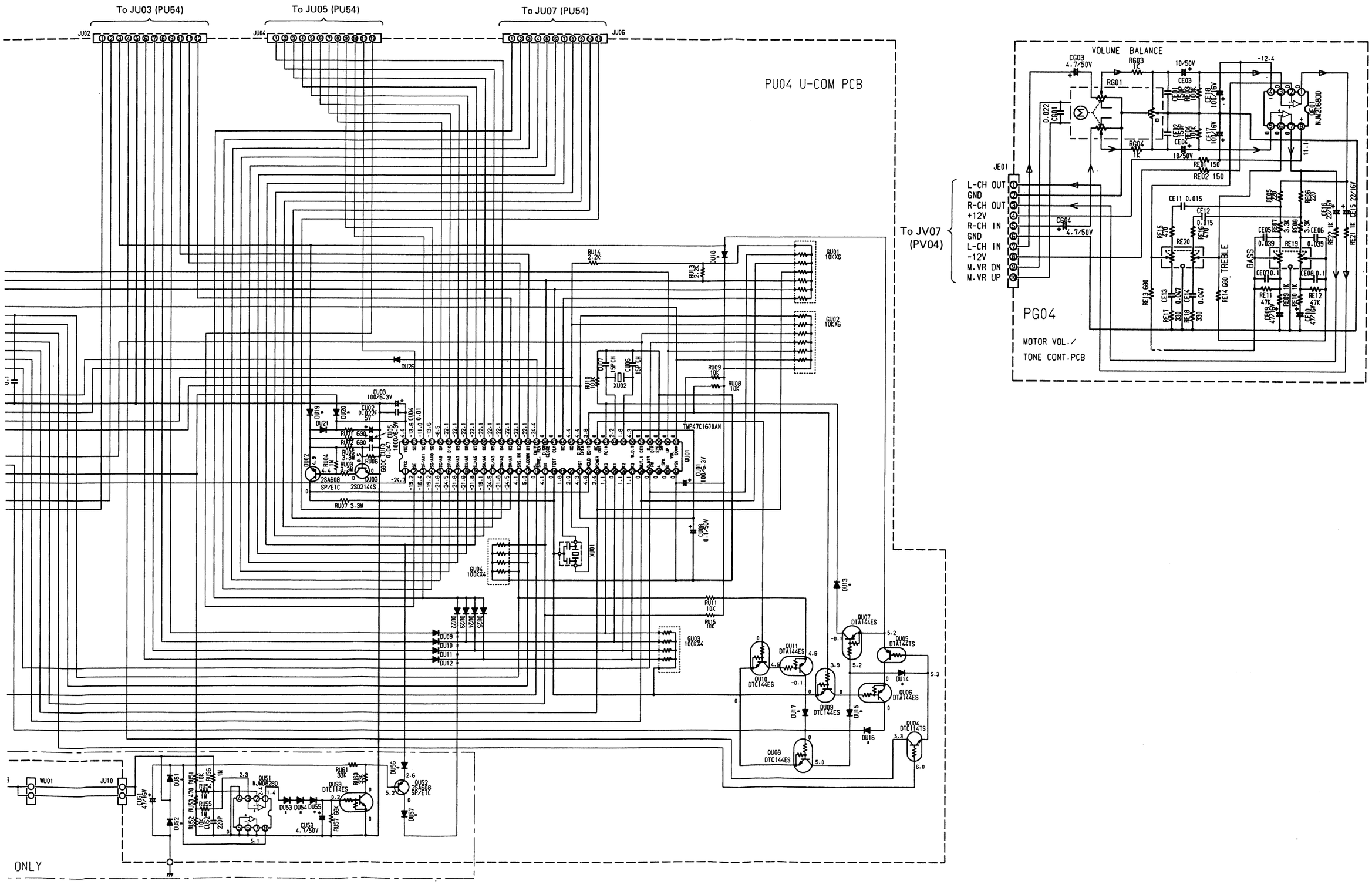



To JU03 (PU54)
To JU05 (PU54)
To JU07 (PU54)
PU04 U-COM PCB
JU01
SYSTEM IN/OUT
POWER DOWN
INT/EXT
DI
POWER
MUTE
D.MOTOR.FWD
VKK
DOOR SW.
D.MOTOR.REV
CLK
DO
SD
DOOR SW.
VOL.UP
VOL.DOWN
CE
RC-IN/OUT
+6V
GND
S.STRENGTH
FL
FL
WV01
To JV05 (PV04)
To JV07 (PV04)
JE01
L-CH OUT
GND
R-CH OUT
+12V
R-CH IN
GND
L-CH IN
-12V
M.VR DN
M.VR UP
VOLUME BALANCE
PG04
MOTOR VOL./
TONE CONT.PCB
TMP47C1670AN
XU01
XU02
GU01 10KX6
GU02 10KX6
GU03 10KX4
GU04 100KX4
QU01 DTA144ES
QU02 2SA608 SP/ETC
QU03 2SD2144S
QU04 DTC114TS
QU05 DTA122TS
QU06 DTA144ES
QU07 DTA144ES
QU08 DTC144ES
QU09 DTC144ES
QU10 DTC144ES
QU11 DTA144ES
QU51 NJM8280D
QU52 2SA608 SP/ETC
QU53 DTC114ES
FUNCTION : CD
VOLUME : MINIMUM
FM FREQ. : 87.5MHZ
DOOR : CLOSE
CLOCK : SET
SR1020 ONLY
TOUCH KNOB
WU01
JU10

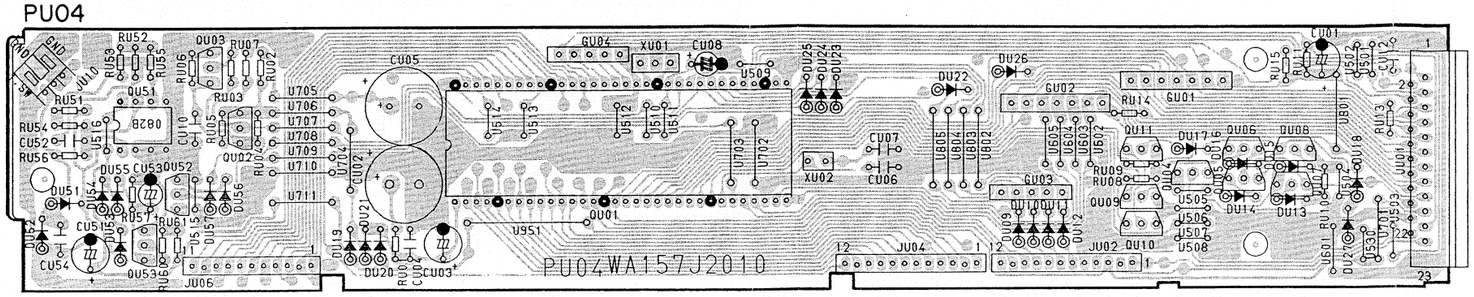

To JU03 (PU54)
To JU05 (PU54)
To JU07 (PU54)
JU02
JU04
JU06
PU04 U-COM PCB
TMP47C1670AN
XU01
XU02
ONLY
To JV07
(PV04)
JE01
L-CH OUT
GND
R-CH OUT
+12V
R-CH IN
GND
L-CH IN
-12V
M.VR DN
M.VR UP
VOLUME BALANCE
PG04
MOTOR VOL./
TONE CONT.PCB
TREBLE
BASS

QU51 QU03 QU02
QU53 QU52

QU01

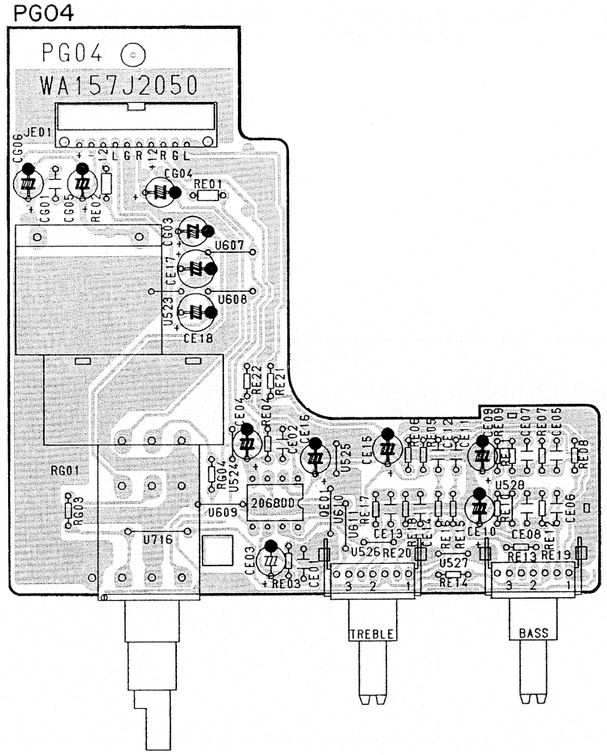
QU09～QU11 QU04～QU08

PU04

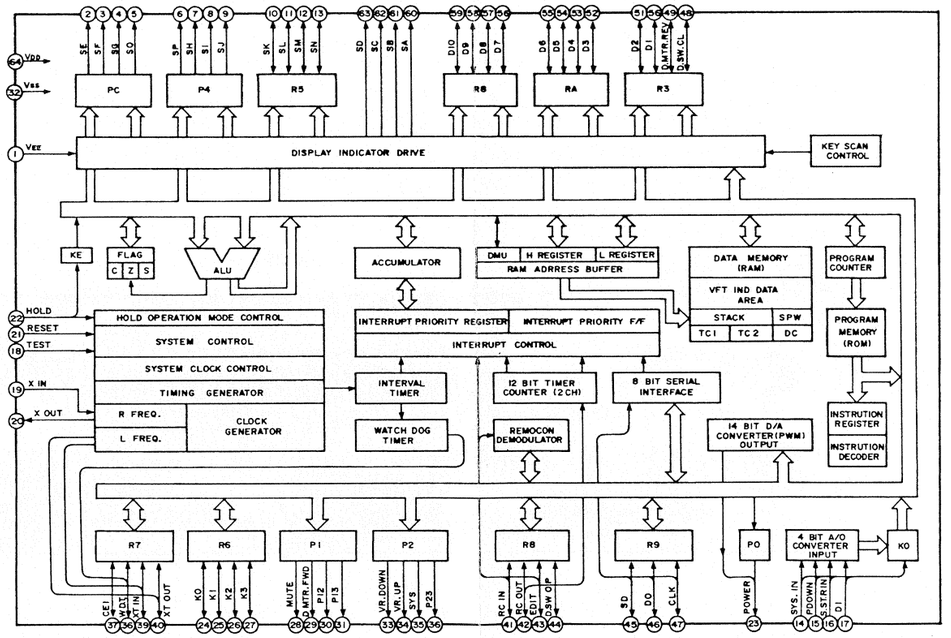


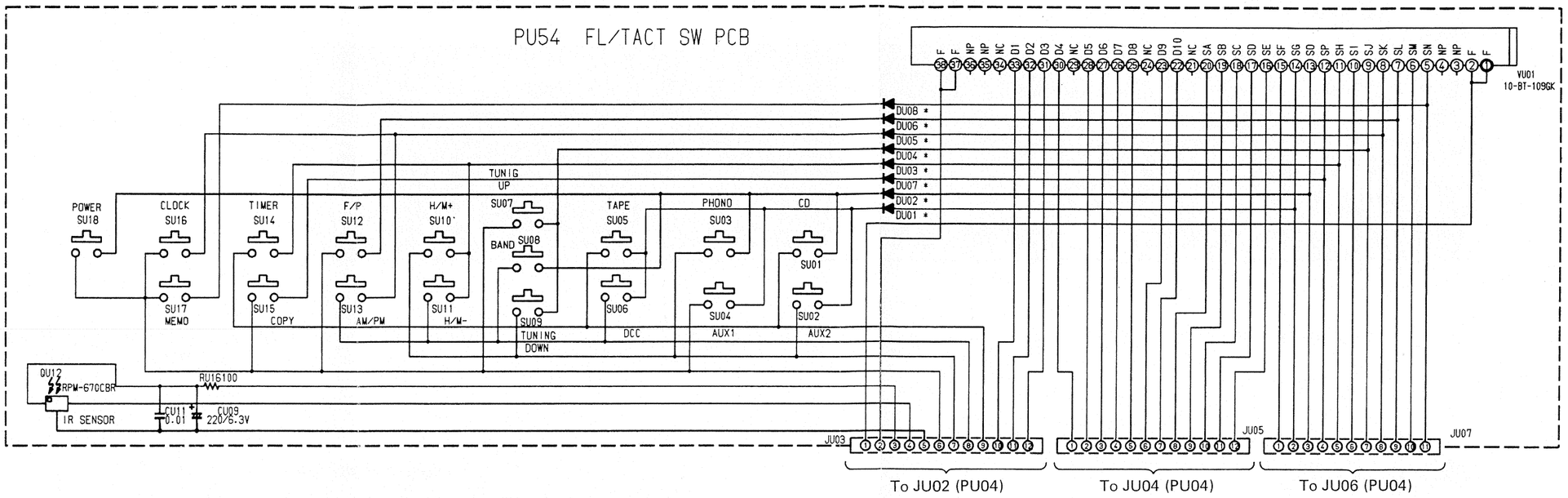
QE01

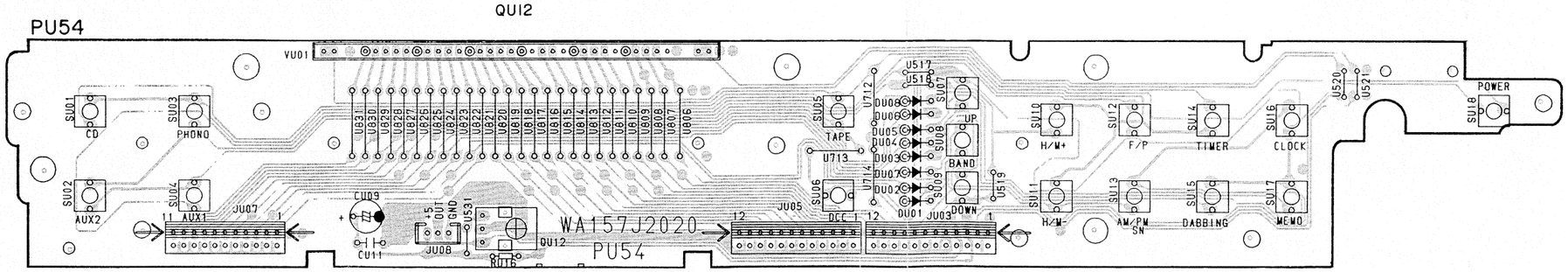
PG04



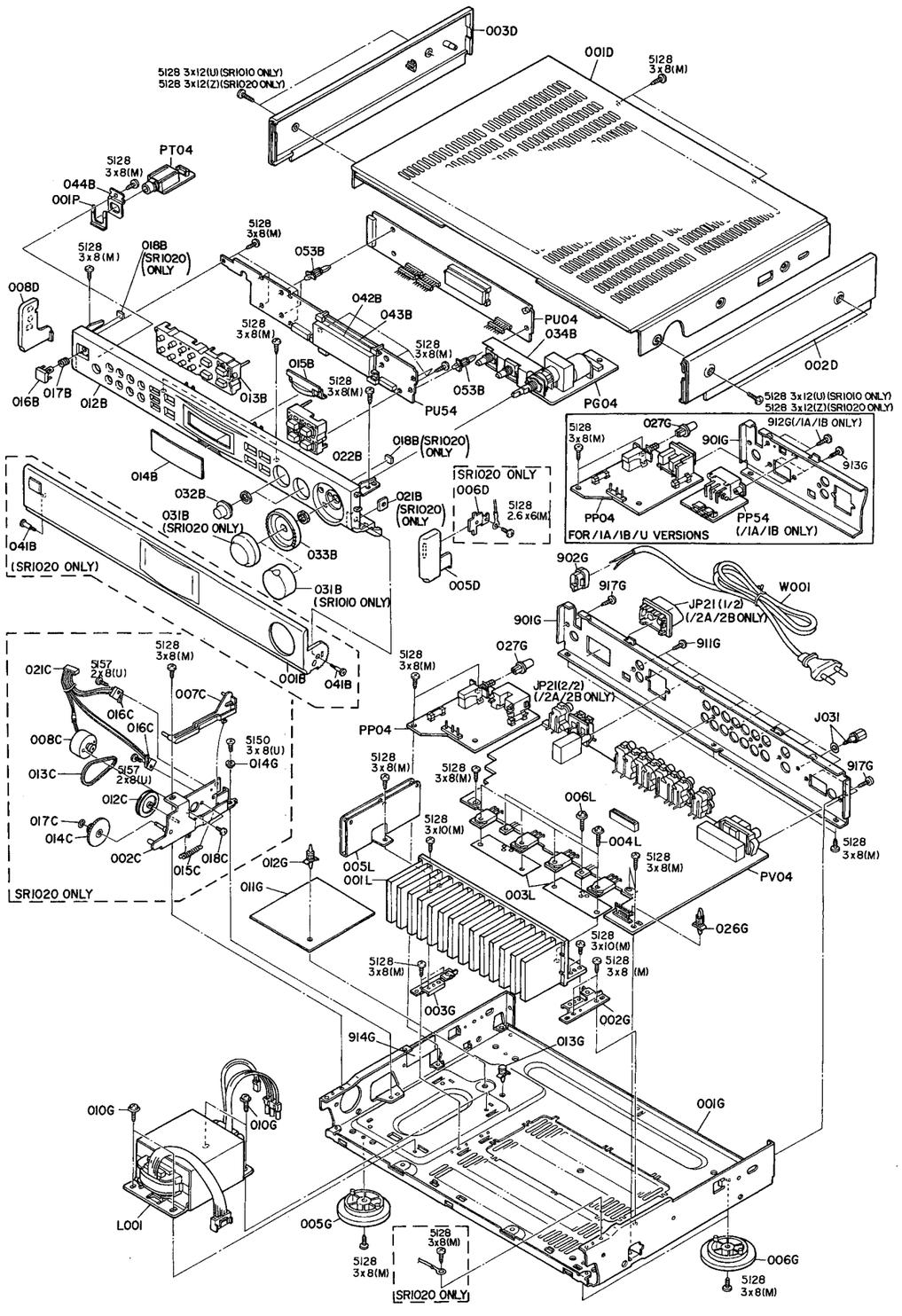
QU01 : TMP47C1670AN




PU54 FL/TACT SW PCB
VU01
10-BT-109GK
POWER
SU18
CLOCK
SU16
TIMER
SU14
F/P
SU12
H/W+
SU10
TUNIG
UP
SU07
BAND
SU08
SU09
TUNING
DOWN
TAPE
SU05
PHONO
SU03
CD
SU01
SU17
MEMO
SU15
COPY
SU13
AM/PM
SU11
H/W-
SU06
DCC
SU04
AUX1
SU02
AUX2
DU08 *
DU06 *
DU05 *
DU04 *
DU03 *
DU07 *
DU02 *
DU01 *
DU12
RPW-670CBR
IR SENSOR
RU16100
CU11
0.01
CU09
220/6.3V
JU03
JU05
JU07
To JU02 (PU04)
To JU04 (PU04)
To JU06 (PU04)


PU54
QU12
VU01
SU01
CD
SU03
PHONO
SU02
AUX2
SU04
AUX1
JU07
CU03
CU11
JU08
SU31
+5
OUT
GND
RU16
QU12
WA157J2020
PU54
JU05
SU05
TAPE
SU06
DCC
U712
U713
U714
U517
U518
SU07
UP
SU08
BAND
SU09
DOWN
U519
DU08
DU06
DU05
DU04
DU03
DU07
DU02
DU01
JU03
SU10
H/W+
SU11
H/W-
SU12
F/P
SU13
AM/PM
SN
SU14
TIMER
SU15
DABBING
SU16
CLOCK
SU17
MEMO
U520
U521
SU18
POWER

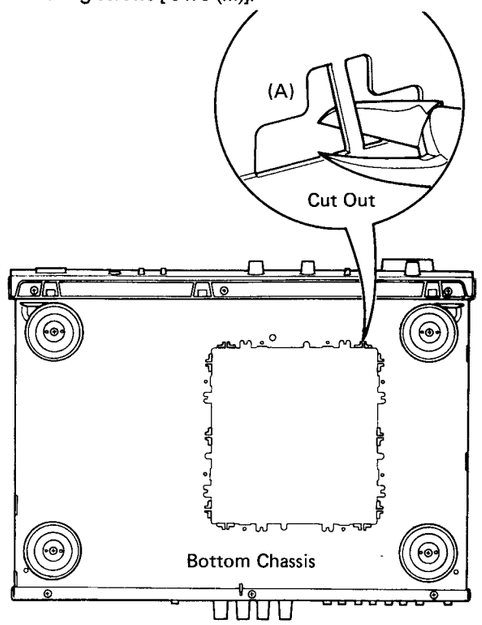
4. EXPLODED VIEW AND PARTS LIST



REF. DESIG.	PART NO.	DESCRIPTION
001B	4822 426 60645	ESCUTCHEON, DOOR PANEL ASSY [SR1020]
012B	4822 426 51679	FRONT PANEL [SR1020]
012B	4822 426 51699	FRONT PANEL [SR1010]
013B	4822 410 62811	BUTTON BLOCK(L) [SR1020]
013B	4822 410 62875	BUTTON BLOCK(L) [SR1010]
014B	4822 450 62123	FL WINDOW [SR1020]
014B	4822 450 62144	FL WINDOW [SR1010]
015B	4822 381 11434	IR LENS
016B	4822 410 62813	POWER BUTTON [SR1020]
016B	4822 410 62877	POWER BUTTON [SR1010]
017B	4822 492 33409	POWER BUTTON SPRING
022B	4822 410 62812	BUTTON BLOCK (R) [SR1020]
022B	4822 410 62876	BUTTON BLOCK (R) [SR1010]
031B	4822 413 41818	MAIN VOLUME KNOB [SR1020]
031B	4822 413 41823	MAIN VOLUME KNOB [SR1010]
032B	4822 413 31768	TONE KNOB [SR1020]
032B	4822 413 31775	TONE KNOB [SR1010]
033B	4822 413 41819	BALANCE KNOB [SR1020]
033B	4822 413 41822	BALANCE KNOB [SR1010]
041B	4822 502 21379	DOOR SPECIAL SCREW [SR1020]
042B	4822 256 92093	FL HOLDER
007C	4822 404 21283	LEVER [SR1020]
008C	4822 361 21687	MOTOR ASSY [SR1020]
012C	4822 528 40363	PULLEY [SR1020]
013C	4822 358 31264	BELT [SR1020]
014C	4822 522 33388	GEAR [SR1020]
015C	4822 492 33411	SPRING [SR1020]
016C	4822 271 30768	MINI SWITCH [SR1020]
017C	4822 462 71954	STOPPER, WASHER [SR1020]
018C	4822 502 21381	P.H.M. SCREW, (M1.7X2) [SR1020]
002D	4822 426 30156	SIDE PANEL (R) [SR1020]
002D	4822 443 41304	SIDE PANEL (R) [SR1010]
003D	4822 426 30157	SIDE PANEL (L) [SR1020]
003D	4822 443 41305	SIDE PANEL (L) [SR1010]
005D	4822 532 12253	BUSHING, SIDE (R) [SR1020]
005D	4822 532 21483	BUSHING, SIDE (R) [SR1010]
006D	4822 281 50181	TOUCH CONTACTOR [SR1020]
008D	4822 532 12254	BUSHING, SIDE (L) [SR1020]
008D	4822 532 21484	BUSHING, SIDE (L) [SR1010]
005G	4822 462 42064	LEG, FRONT [SR1020]
005G	4822 462 42063	LEG, FRONT [SR1010]
006G	4822 462 42065	LEG, REAR [SR1020]
006G	4822 462 42051	LEG, REAR [SR1010]
010G	4822 502 12511	B.T.SCREW(W/W), 3X8
027G	4822 410 60343	MAIN POWER BUTTON
902G	4822 532 60948	BUSHING, AC CORD
911G	4822 502 13636	PH.TAP.SCREW, RCA PIN JACK
912G	4822 502 13636	PH.TAP.SCREW, VOLTAGE SELECTOR [/1A/1B]
913G	4822 502 13636	PH.TAP.SCREW, AC OUTLET [/1A/1B]
917G	4822 502 13636	PH.TAP.SCREW, REAR PANEL
003L	4822 466 62412	POWER TR SHEET
004L	4822 502 13851	B.T.SCREW(W/W), POWER TR
⚠L001	4822 146 21753	POWER TRANSF., 110/220V [/1A/1B]
⚠L001	4822 146 21752	POWER TRANSF., 230/240V [/2A/2B]
		PACKING
001T	4822 736 21835	USER MANUAL
Z001	4822 218 10522	UNIT K, REMOTE COMMANDER
Z003	4822 157 63083	LOOP ANTENNA
Z004	4822 303 50079	EXT.ANTENNA
Z006	4822 265 10092	AC CONVERSION PLUG [/1A/1B]

5. USE OF SERVICE HOLE

(1) If the use of the service hole is required, remove the cover by cutting 10 bridges (A) using a tool such as a pair of cutter.
(2) During this work, be careful of the sharp edges at the cut positions.
(3) After using the service hole, rotate the cover and fix it using screws [3 x 6 (M)].



This illustration is intended to make the procedure above easier to understand. Therefore, the view of the unit may be different from the illustration.

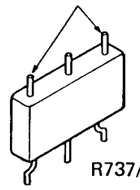
6. IDLING CURRENT ADJUSTMENT

(1) Before switching the power ON, set the Master Volume control to the minimum position and the Balance and Tone controls to the center positions. Then, rotate the semi-fixed resistors R719 (L CH) and R720 (R CH) on the PC board PV04 center positions.
(2) Connect a digital voltmeter, set for the DC voltage input to the pertinent test points (the marked ones of R737-R738) on the PC board PV04.
(3) After the completion of the above setup.
Switch the power ON and adjust the semi-fixed resistors R719 (L CH) and R720 (R CH) on the PC board PV04 according to the reading of the digital voltmeter. The setting values are 7 mV (19 mA) of the both channels.

Note :
When you proceed to this adjustment after having serviced the unit, operate the unit with a non-signal condition for about 15 minutes after turning its power ON, then adjust to 7 mV.
If you should proceed to the adjustment in less than 15 minutes after turning the power ON, refer to the follwing table for the value to be adjusted.

Power ON	L ch	R ch
30 sec. ~ 1 min.	3.0 mV	2.5 mV
1 min. ~ 2 min.	4.5 mV	3.5 mV
2 min. ~ 3min.	6.0 mV	4.5 mV
More than 10 min.	7.0 mV	7.0 mV

Measurement point



7. SERVICE PROGRAM

7-1. T.R. POINT ME (tracking point memory) mode.
From power OFF (stand-by mode), when the STANDBY switch is pressed ON while pressing the MEMO and DOWN keys simultaneously, the T.R POINT ME mode is called. Frequencies to be memorized are as follows.

		P1	P2	P3	P4	P5	P6	P7
FM [MHz]	EUROPE	90	98	106	-			
	USA	90	98	106	-			
	JAPAN	78	83	88	-			
AM [KHz]	9KHz without LW					603	999	1404
	9KHz with LW					603	999	1404
	10 KHz					600	1000	1400

		P8	P9	P10	P11	P12~P30
FM [MHz]	EUROPE USA JAPAN					
AM [KHz]	9KHz without LW	-	-	-	-	-
	9KHz with LW	173	209	272	152	531
	10 KHz	-	-	-	-	-

- : Low end frequency of the FM or AM (MW) band.

7-2. FL segment check mode.
From power OFF (stand-by mode), when the STANDBY switch is pressed ON while pressing the UP and MEMO keys simultaneously, the FL segment check mode is called.
- When the test mode is entered, microprocessor's MUTE OUT becomes "HIGH" to apply muting to the unit itself.
No change occurs in any setting.
- All segments are alight for 5 seconds.
- The segment check mode is canceled automatically.
- If any key is pressed while all segments are lighted, the segment check mode will be canceled and the operation according to the pressed key will occur.

8.TUNER ALIGNMENT PROCEDURES

- Set to T.R point ME mode of the service program.
(P2) to (P10) in the Digital Readout Frequency Setting column shows preset numbers for the above mode.
- Before alignment, connect a dummy resistor of 47 kohms to the tuner output terminal.
- MODE switch is built in the remote commander.

8-1. FM Alignment Procedures

(Band switch at "FM" position and MODE switch at "MONO" position)

FM RF Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	FM signal generator to FM antenna terminal. Adjust the RF signal output so that slight noise occurs at the upper and lower sides of the output waveform.	98.0 MHz	AC VTVM to L-or R-channel Tape out (JV03)	98.0 MHz (P2)	Front end (A101) IFT for maximum output and minimum distortion.
2	FM signal generator 500 μV output to FM antenna terminal (75-ohm).	98.0 MHz	Distortion meter to L-or R-channel Tape out (JV03)	98.0 MHz (P2)	L201 core for minimum distortion.

FM IF Alignment
(Band switch at "FM" position and MODE switch at "AUTO STEREO" position)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	FM signal generator 500 μV output modulated by MPX signal generator to FM antenna terminal (75-ohm).	Stereo L-channel (1.000 Hz)	VTVM to L-channel Tape out (JV03 L-channel)	98.0 MHz (P2)	Front end (A101) IFT for minimum distortion.
2	Modulation level: IHF 67.5 kHz +9% pilot dev. DIN 40 kHz +8% pilot dev.	Stereo R-channel (1.000 Hz)	VTVM to R-channel Tape out (JV03 R-channel)		

Muting Level Alignment
(Band switch at "FM" position and MODE switch at "AUTO STEREO" position)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	FM signal generator 6.3 μV output to FM antenna terminal (75-ohm)	98.0 MHz	AC VTVM to L-or R- channel Tape out (JV03)	98.0 MHz (P2)	R212 to a point at which output appears.

PCS 71 198
MARA-00649 / DRUCK 16

Multiplex Alignment

(Band switch at "FM" position and MODE switch at "AUTO STEREO" position)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	FM signal generator 500 μV output modulated by MPX signal generator to FM antenna terminal (75-ohm) Modulation level : IHF 67.5 kHz +9% pilot dev. DIN 40 kHz +8% pilot dev.	Stereo L-channel (1.000 Hz)	VTVM to R-channel Tape out (JV03 R-channel)	98.0 MHz (P2)	R211 so that channel separation is identical between both channels.
2		Stereo R-channel (1.000 Hz)	VTVM to L-channel Tape out (JV03 L-channel)		
3	Repeat steps 1 and 2				

8-2. MW (AM) / LW Alignment Procedures

(Band switch at "MW" or "AM" position)

AM IF Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	Sweep generator to AM antenna terminal.	450 kHz	AC VTVM to L-or R-channel Tape out (JV03)	—	LA06 for maximum and symmetrical waveform.

MW (AM) RF Alignment

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	AM signal generator to AM loop antenna in a test loop.	603 kHz (Europe, Japan) 600 kHz (USA)	VTVM to L-or R-channel Tape out (JV03)	603 kHz 600 kHz (P5)	LA01 for maximum output.
2		1404 kHz (Europe, Japan) 1400 kHz (USA)		1404 kHz 1400 kHz (P7)	CA01 for maximum output.
3	Repeat steps 1 and 2 until sensitivity is maximized.				

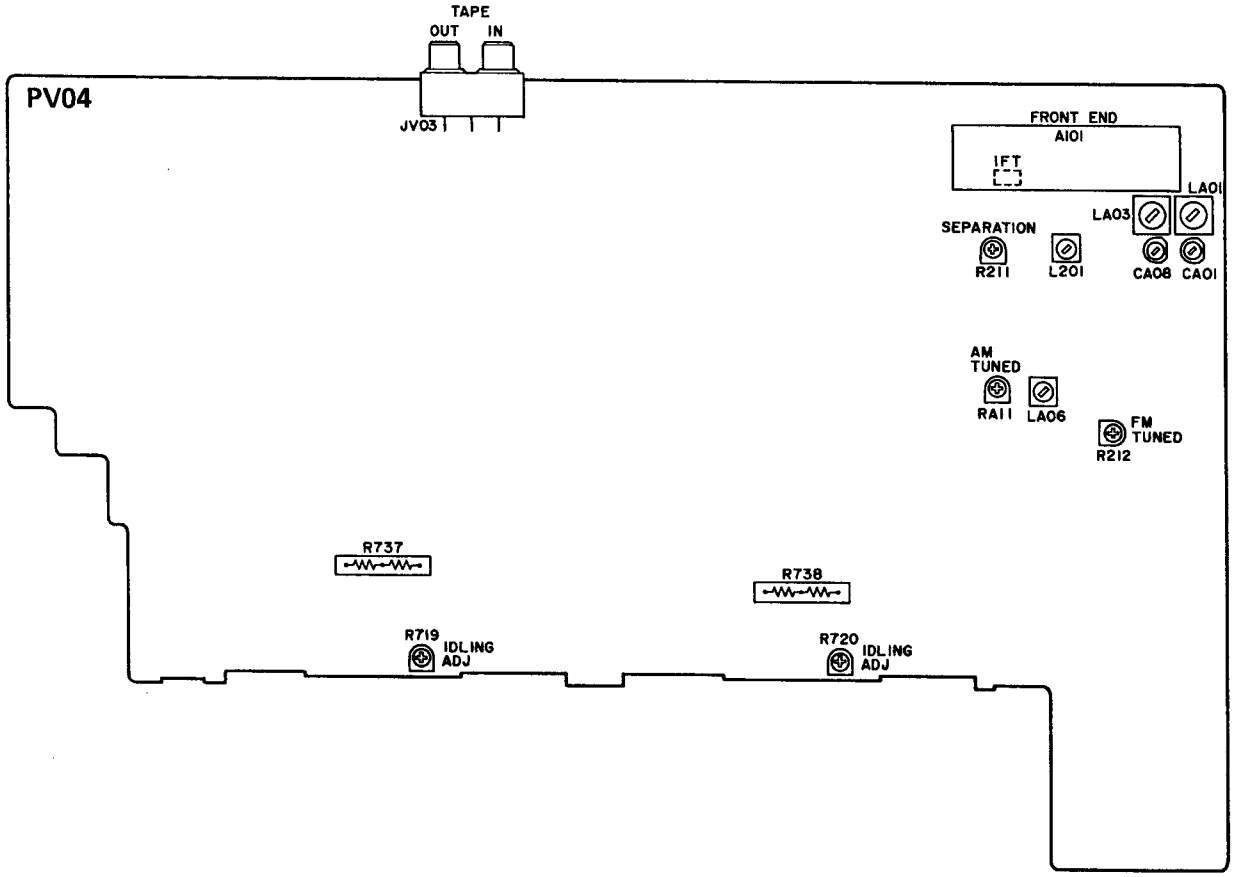
LW RF Alignment (Europe only)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	AM signal generator to AM loop antenna in a test loop.	173 kHz	VTVM to L-or R-channel Tape out (JV03)	173 kHz (P8)	LA03 for maximum output.
2		272 kHz		272 kHz (P10)	CA08 for maximum output.
3	Repeat steps 1 and 2 until sensitivity is maximized.				

AM Auto Stop Alignment (Band switch at "MW" or "AM" position)

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Digital Readout Frequency Setting	Adjust
1	RF generator to AM loop antenna in a test loop (500 μV / m)	999 kHz (Europe, Japan) 1000 kHz (USA)	—	999 kHz 1000 kHz (P6)	RA11 so that the "TUNED" on the display tube lights.

9. ALIGNMENT POINTS AND TEST POINTS

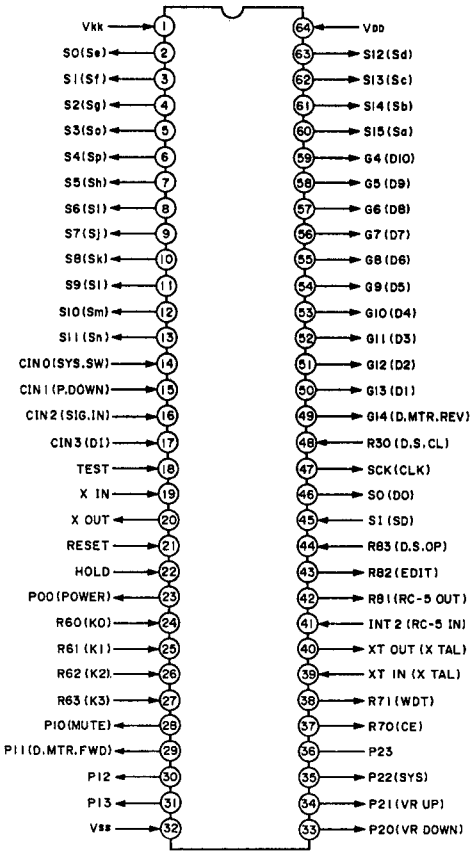


10. MICROPROCESSOR SPECIFICATIONS

Receiving Frequency Range, Channel Space, Reference Frequency and Intermediate Frequency

		Receiving Frequency	Channel Space	Reference Frequency	Intermediate Frequency
Europe	FM MW LW	87.5 ~ 108.0 MHz 531 ~ 1602 kHz 152 ~ 282 kHz	50 kHz 9 kHz 1 kHz	25 kHz 9 kHz 1 kHz	+10.7 MHz +450 kHz +450 kHz
U.S.A.	FM AM	87.5 ~ 108.0 MHz 520 ~ 1710 kHz	100 kHz 10 kHz	25 kHz 10 kHz	+10.7 MHz +450 kHz
Japan	FM AM	76.0 ~ 90.0 MHz 531 ~ 1602 kHz	100 kHz 9 kHz	25 kHz 9 kHz	-10.7 MHz +450 kHz

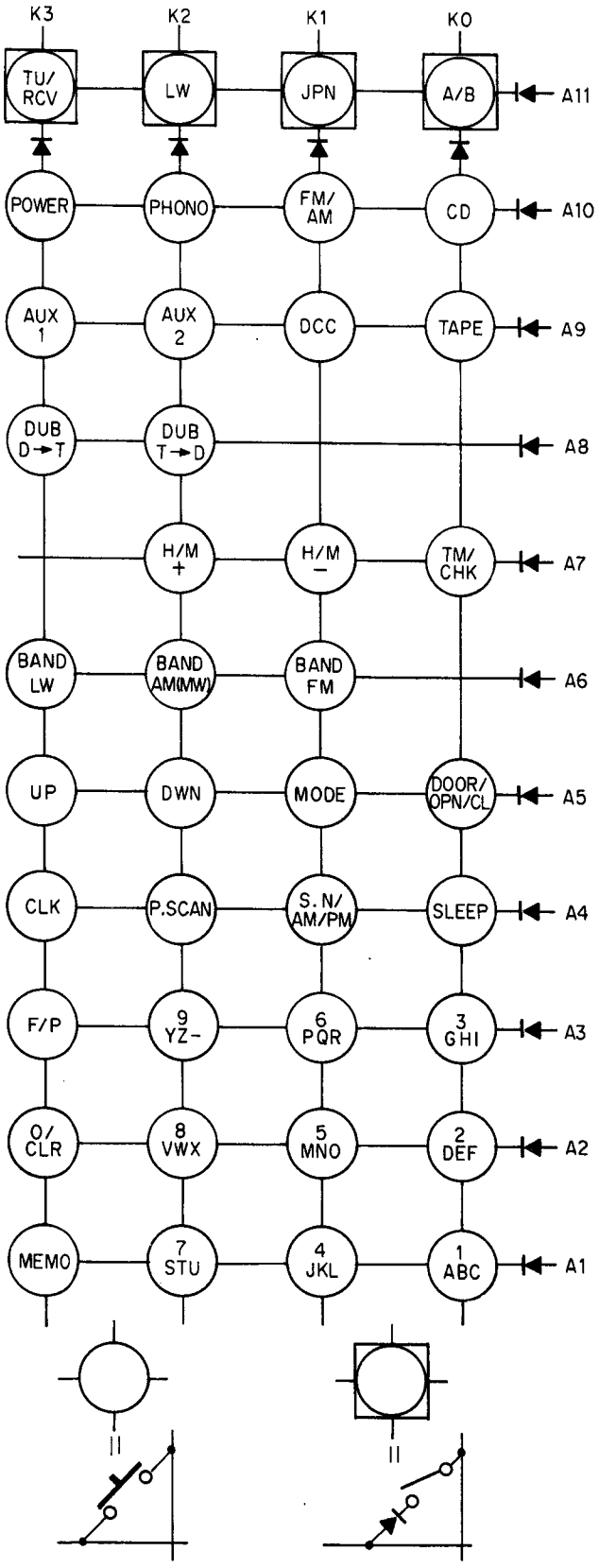
Pin Connections (TMP47C1670AN)



Pin Nbr.	Pin Name	I / O	Action	Function
1	Vkk	-	-	-35 V (FL Display Drive)
2	S0 (Se)	O	H	FL e - segment
3	S1 (Sf)	O	H	FL f - segment / key switch (A11)
4	S2 (Sg)	O	H	FL g - segment / key switch (A10)
5	S3 (So)	O	H	FL o - segment / key switch (A9)
6	S4 (Sp)	O	H	FL p - segment / key switch (A8)
7	S5 (Sh)	O	H	FL h - segment / key switch (A7)
8	S6 (Si)	O	H	FL i - segment / key switch (A6)
9	S7 (Sj)	O	H	FL j - segment / key switch (A5)
10	S8 (Sk)	O	H	FL k - segment / key switch (A4)
11	S9 (Sl)	O	H	FL l - segment / key switch (A3)
12	S10 (Sm)	O	H	FL m -segment / key switch (A2)
13	S11 (Sn)	O	H	FL n - segment / key switch (A1)
14	CIN0 (SYS. SW)	I	H	System Switch
15	CIN1 (P. DOWN)	I	L	Power down signal Input
16	CIN2 (SIG. IN)	I	-	Signal Strength Indicator
17	CIN3 (D1)	I	H	Serial Data Input
18	TEST	-	-	Not Used
19	X IN	I	-	Clock (4.19 MHz)
20	X OUT	O	-	
21	RESET	I	L	Reset and Watch - Dog Timer
22	HOLD	I	L	Hold Mode
23	P00 (POWER)	O	H	Power Relay Drive
24	R60 (K0)	I	H	Key Switch
25	R61 (K1)	I	H	
26	R62 (K2)	I	H	
27	R63 (K3)	I	H	
28	P10 (MUTE)	O	H	Muting
29	P11(D.MTR. FWD)	O	H	Door Motor (Forward)
30	P12	O	-	Not Used
31	P13	O	-	
32	Vss	-	-	GND

Pin Nbr.	Pin Name	I / O	Action	Function
33	P20 (VR DOWN)	O	H	Motor Driven Volume (Down)
34	P21 (VR UP)	O	H	Motor Driven Volume (Up)
35	P22 (SYS)	O	H	System Switch
36	P23	-	-	Not Used
37	R70 (CE)	O	H	Analog Switch / PLL Chip Enable
38	R71 (WDT)	O	L	Watch - Dog Timer
39	XT IN (X TAL)	I	-	Clock (32.768 kHz)
40	XT OUT (X TAL)	O	-	
41	INT2 (RC-IN)	I	H	Remote Control (RC-5) Input
42	R81 (RC-OUT)	O	H	Remote Control (RC-5) Output
43	R82 (EDIT)	O	L	Edit
44	R83 (D. S. OP)	I	L	Door Switch Open
45	SI (SD)	I	L	Station Detector Input
46	SO (DO)	O	H	Serial Data Output
47	SCK (CLK)	O	H	Serial Clock Output
48	R30 (D. S. CL)	I	L	Door Switch Close
49	G14 (D.MTR. REV)	O	H	Door Motor (Reverse)
50	G13 (D1)	O	H	FL Display D1 Digit
51	G12 (D2)	O	H	FL Display D2 Digit
52	G11 (D3)	O	H	FL Display D3 Digit
53	G10 (D4)	O	H	FL Display D4 Digit
54	G9 (D5)	O	H	FL Display D5 Digit
55	G8 (D6)	O	H	FL Display D6 Digit
56	G7 (D7)	O	H	FL Display D7 Digit
57	G6 (D8)	O	H	FL Display D8 Digit
58	G5 (D9)	O	H	FL Display D9 Digit
59	G4 (D10)	O	H	FL Display D10 Digit
60	S15 (Sa)	O	H	FL Display A - segment
61	S14 (Sb)	O	H	FL Display B - segment
62	S13 (Sc)	O	H	FL Display C - segment
63	S12 (Sd)	O	H	FL Display D - segment
64	Vdd	-	-	+5.5 V

Key Matrix



Description of Keys

1. Diode Switches (for initial settings)

LW : Used to switch the tuner frequency band. When pressed ON, the AM band unconditionally becomes MW and LW. The FL display shows MW and LW.

JPN : Used to switch the tuner frequency band. When pressed ON, the band is unconditionally switched to the Japan version.

A/B : Two types of receivers having different features (Model A / Model B) can be selected. Setting this switch to ON selects Model B, which is capable of AUX-2, DCC and dubbing key operations.

TU/ RCV : This is the tuner / receiver initial setting switch. Setting it ON selects the receiver.

2. Momentary Switches and Look Switches (switches are momentary unless indicated otherwise)

S.N/ AM/PM : Used to set the station name preset mode and for entering the AM / PM indicator in clock mode. Operation as the station name key is valid only in tuner mode.

CLK : Used to set the unit to clock mode. When this key is pressed, the FL display switches to the clock display and stays in clock mode until the current general operation is completed.

TM/ CHK : Used to set the unit to timer mode and to check the program contents after the timer is set. If this key is pressed after a timer program has been set, the program contents are shown on the FL display in the specified sequence. If no timer program is set, the unit enters timer mode allowing the user to select the timer program or to set the timer to execute or standby mode.

DOOR/ OPN/CL : This is the door open / close key. Each press of this key opens or closes the door alternately.

1 ABC ~ 9 YZ- : Used for entering numbers and alphabetic characters when recalling preset stations and entering station names. A space can be inserted by entering the -symbol with the 9 YZ- key. Although these keys are normally used as numeric keys, when the S.N / AM / PM (Station Name / AM / PM) key is pressed to set the unit to station name preset mode, they are used for entering alphabetic characters. One press enters the first alphabetic from the left (e.g., "A" when the ABC key is pressed), and subsequent pressing allows the user to select one of the key's four characters in sequence (e.g., A→B→C→1→A).

(0/CLR) : Used for entering "O" and also as a CLEAR key in various modes.

(SLEEP) : This is the sleep timer mode key, used for operations such as turning the sleep timer mode ON / OFF.

(BAND FM) : This key sets the tuner band to FM. When this key is pressed, the tuner input and the FM band are selected.

(BAND AM/MW) : This key sets the tuner band to AM (MW). When this key is pressed, the tuner input and the AM (MW) band are selected.

(BAND LW) : This key is used to set the tuner band. This key is valid only when the "LW" initial setting key is ON. The FL display indicates "FM / AM" with a 2-band tuner or receiver and "FM, MW / LW" with a 3-band tuner or receiver. Set to LW with this key.

(H/M +) (H/M −) : This key is used in combination with the CLOCK key to set the figures of hour and minute. This key is used in the entry of time when setting the clock or timer.

(P.SCAN) : Used for automatically scanning the tuner's preset channels. When this key is pressed, the FL display's "PRESET SCAN" segments blink and preset scanning can be started by pressing the UP or DOWN key.

(MEMO) : Used to enter a memory mode such as preset memory, timer set or station name preset mode, or to complete the memory operation.

(POWER) : Turns the power ON / OFF. This is a non-lock switch which turns the power ON and OFF alternately. When turned OFF, all output ports except for specified ports are become Low-level, but specified input ports and the remote control input port remain accessible.

(F/P) : This is the Frequency / Preset key used for switching the FL display mode between the frequency display and preset display. The initial setting is the frequency display mode. The frequency and preset display modes are switched in cyclic sequence. The UP / DOWN keys and other keys function differently depending on the display mode.

(DUB O→T) (DUB T→O) : These are dubbing switch keys which control the input selector data. These keys are valid only when Model B is selected with the (A/B) key.

(PHONO) (FM/AM) (CD) (AUX 1) (AUX 2) (DCC) (TAPE) : These are input selector keys. Each key outputs the corresponding serial data. The AUX-2 and DCC keys are valid only when Model B is selected with the (A/B) key.

(MODE) : Switches the FM mode between stereo and monaural. The initial setting is the AUTO STEREO. Switching is carried out by serial data sent to the PLL. Switch operation is cyclic. In stereo mode, "AUTO" lights in the FL display.

(UP) (DWN) : Used for increasing / decreasing the tuner frequency or preset channel number. UP adds and DOWN subtracts. Operation differs depending on the mode set by the F / P key. In frequency mode, the keys increase / decrease the frequency, and in preset mode, the keys increase / decrease the preset channel number. In station name preset mode, timer mode and clock set mode, the keys function as cursor keys for selecting the character input position.

11. ELECTRICAL PARTS LIST

ASSIGNMENT OF COMMON PARTS CODES.

RESISTOR

R＊＊＊ : (1) GD05 xxx 140, Carbon film fixed resistor, ±5% 1/4W
R＊＊＊ : (2) GD05 xxx 160, Carbon film fixed resistor, ±5% 1/6W

① —— Resistance value

Examples ;
① Resistance value

0.1 Ω 001	10 Ω 100	1 kΩ 102	100 kΩ 104
0.5 Ω 005	18 Ω 180	2.7 kΩ 272	680 kΩ 684
1 Ω 010	100 Ω 101	10 kΩ 103	1 MΩ 105
6.8 Ω 068	390 Ω 391	22 kΩ 223	4.7 MΩ 475

(Note) Please distinguish 1/4W from 1/6W by the shape of parts used actually.

C＊＊＊ : CERAMIC CAP.
(1) DD1x xxx 370, Ceramic capacitor
Disc type
Temp. coeff. P350 ~ N1000, 50V
① ② —— Capacity value
—— Tolerance

Examples ;
① Tolerance (Capacity deviation)
± 0.25pF 0
± 0.5pF 1
± 5% 5

＊ Tolerance of COMMON PARTS handled here are as follows :
0.5pF ~ 5pF ....± 0.25pF
6pF ~ 10pF ....± 0.5pF
12pF ~ 560pF ....± 5%

② Capacity value

0.5 pF 005	3 pF 030	100 pF 101
1 pF 010	10 pF 100	220 pF 221
1.5 pF 015	47 pF 470	560 pF 561

C＊＊＊ : CERAMIC CAP.
(1) DK16 xxx 300, High dielectric constant ceramic capacitor
① Disc type
Temp. chara. 2B4, 50V
—— Capacity value

Examples ;
② Capacity value

100 pF 101	1000 pF 102	10000 pF 103
470 pF 471	2200 pF 222	

C＊＊＊ : ELECTROLY CAP. (⧺), FILM CAP. (∓)
(1) EA xxx xxx 10, Electrolytic capacitor
One-way lead type,
① ② Tolerance ± 20%
—— Working voltage
—— Capacity value

Examples ;
① Capacity value

0.1 µF 104	4.7 µF 475	100 µF 107
0.33 µF 334	10 µF 106	330 µF 337
1 µF 105	22 µF 226	1100 µF 118
		2200 µF 228

② Working voltage

6.3 V 006	25 V 025
10 V 010	35 V 035
16 V 016	50 V 050

(2) DF15 xxx 350, Plastic film capacitor
One-way type, Mylar ± 5% 50V
① —— Capacity value

Examples ;
① Capacity value

0.001 µF (1000pF) 102	0.1 µF 104
0.0018 µF 182	0.56 µF 564
0.01 µF 103	1 µF 105
0.015 µF 153	

NOTE : The above CODES (R＊＊＊, R＊＊＊＊, C＊＊＊, C＊＊＊＊ and C＊＊＊) are omitted on the schematic diagram in some case.
On the occasion, be confirmed common parts on the parts list.

REF. DESIG.	PART NO.	DESCRIPTION
		PG04-MOTOR VOLUME AND TONE CONTROL CIRCUIT BOARD
		PG04-CAPACITORS
CE03	4822 124 22571	ELECT 10µF 50V
CE04	4822 124 22571	ELECT 10µF 50V
CE09	4822 124 41539	ELECT 47µF 16V
CE10	4822 124 41539	ELECT 47µF 16V
CE15	4822 124 90358	ELECT 22µF 16V
CE16	4822 124 90358	ELECT 22µF 16V
CE17	4822 124 90354	ELECT 100µF 16V
CE18	4822 124 90354	ELECT 100µF 16V
CG01	4822 122 30103	CERAMIC 0.022µF+80%-20% 50V
CG03	4822 124 22274	ELECT 4.7µF 50V
CG04	4822 124 22274	ELECT 4.7µF 50V
C＊＊＊		**PG04-CAPACITORS (COMMON)** HIGH DIELECTRIC CONSTANT CERAMIC CAPACITOR 50V: CE01, CE02
C＊＊＊		PLASTIC FILM CAPACITOR ONE-WAY TYPE, MYLAR ± 5% 50V: CE05~CE08, CE11~CE14
		PG04-RESISTORS
RE01	4822 052 10151	150Ω ± 5% 1/6W
RE02	4822 052 10151	150Ω ± 5% 1/6W
RE19	4822 101 30834	10KΩ(E) VARIABLE
RE20	4822 101 30834	10KΩ(E) VARIABLE
RG01	4822 101 30835	100KΩ (B) X2/100K(W) VARIABLE
R＊＊＊		**PG04-RESISTORS (COMMON)** CARBON FILM FIXED RESISTOR, ± 5% 1/6W: RE03~RE18, RE21, RE22, RG03, RG04
		PG04-SEMICONDUCTORS
QE01	4822 209 73064	IC NJM2068DD
		PP04-POWER SW CIRCUIT BOARD
		PP04-CAPACITORS
⚠GP01	4822 122 33276	CERAMIC 0.01µF ± 1% 400V
GP02	4822 122 33276	CERAMIC 0.01µF ± 1% 400V
		PP04-RESISTORS
RP01	4822 053 11821	820Ω ± 5% 2W
R＊＊＊		**PP04-RESISTORS (COMMON)** CARBON FILM FIXED RESISTOR, ±5% 1/6W: RP02
		PP04-SEMICONDUCTORS
DP01	4822 130 32508	DIODE RL103E/DSF10C
QP01	4822 130 43312	TRANSISTOR, 2SC3312 (R,S)
		PP04-MISCELLANEOUS
⚠F001	4822 070 31252	FUSE 1.25A 250V
⚠F002	4822 070 31252	FUSE 1.25A 250V [/1A/1B]
⚠F003	4822 253 40166	FUSE 2.5A 250V [/2A/2B]
⚠JP21	4822 267 31686	JACK, AC OUTLET 1P [/1A/1B]
⚠JP21	4822 267 31687	JACK, AC OUTLET [/2A/2B]
LP01	4822 280 20534	RELAY
⚠SP01	4822 276 12924	PUSH SWITCH, POWER

REF. DESIG.	PART NO.	DESCRIPTION
		PP54-VOLTAGE SELECTOR CIRCUIT BOARD [/1A/1B ONLY]
		PP54-MISCELLANEOUS
⚠J091	4822 277 21465	SLIDE SWITCH, VOLT SELECTOR [/1A/1B]
		PT04-HEADPHONE CIRCUIT BOARD
		PT04-CAPACITORS (COMMON)
C***		HIGH DIELECTRIC CONSTANT CERAMIC CAPACITOR 50V: CT01, CT02
		PT04-MISCELLANEOUS
JT01	4822 267 31685	JACK, HEADPHONE
		PU04- μ-COM CIRCUIT BOARD
		PU04-CAPACITORS
CU01	4822 126 10935	ELECT 100μF 6.3V
CU02	4822 124 23295	BIG ELECT 0.022F
CU03	4822 126 10935	ELECT 100μF 6.3V
CU04	4822 122 30043	CERAMIC 0.01μF +80%-20% 50V
CU05	4822 126 12867	ELECT 1000μF 6.3V
CU06	4822 122 31823	CERAMIC 15PF ± 5% 50V
CU07	4822 122 31823	CERAMIC 15PF ± 5% 50V
CU08	4822 124 41604	ELECT 0.1μF 50V
CU12	4822 122 40617	CERAMIC 0.1μF +80%-20% 50V
CU51	4822 124 23056	ELECT 47μF 16V [SR1020]
CU53	4822 124 23057	ELECT 4.7μF 50V [SR1020]
		PU04-CAPACITORS (COMMON)
C***		PLASTIC FILM CAPACITOR ONE WAY TYPE, MYLAR ± 5% 50V: CU10
C***		HIGH DIELECTRIC CONSTANT CERAMIC CAPACITOR 50V: CU52
		PU04-RESISTORS
GU01	4822 111 92152	10KΩ X6 RESISTOR COMPO.
GU02	4822 111 92152	10KΩ X6 RESISTOR COMPO.
GU03	4822 111 91837	100KΩ X4 RESISTOR COMPO.
GU04	4822 111 91837	100KΩ X4 RESISTOR COMPO.
RU03	4822 050 23308	3.3MΩ ± 5% 1/6W
RU05	4822 050 23308	3.3MΩ ± 5% 1/6W
RU07	4822 050 23308	3.3MΩ ± 5% 1/6W
		PU04-RESISTORS (COMMON)
R***		CARBON FILM FIXED RESISTOR, ± 5% 1/6W: RU01, RU02, RU04, RU06, RU08~RU11, RU13~RU15, RU51~RU57, RU60, RU61
		PU04-SEMICONDUCTORS
DU09 ≀ DU22	4822 130 33305	DIODE 1SS176,MA165,1SS254
DU24	4822 130 33305	DIODE 1SS176,MA165,1SS254
DU25	4822 130 33305	DIODE 1SS176,MA165,1SS254
DU26	4822 130 33305	DIODE 1SS176,MA165,1SS254
DU51 ≀ DU57	4822 130 33305	DIODE 1SS176,MA165,1SS254 [SR10120]
QU01	4822 209 32644	MICROPROCESSOR TMP47C1670AN
QU02	4822 130 42715	TRANSISTOR, 2SA608SP, 2SA1048, 2SA1309, 2SA933S

REF. DESIG.	PART NO.	DESCRIPTION
QU03	4822 130 61892	TRANSISTOR, 2SD2144S (U, V)
QU04	4822 130 61189	DIGITAL TRANSISTOR, DTC114TS
QU05	4822 130 61187	DIGITAL TRANSISTOR, DTA144TS
QU06	4822 130 42682	DIGITAL TRANSISTOR, DTA144ES/ UN4113
QU07	4822 130 42682	DIGITAL TRANSISTOR, DTA144ES/ UN4113
QU08 ≀ QU10	4822 130 42594	DIGITAL TRANSISTOR, DTC144ES/ UN4213
QU11	4822 130 42682	DIGITAL TRANSISTOR, DTA144ES/ UN4113
QU51	4822 209 63468	IC NJM082D [SR1020]
QU52	4822 130 42715	TRANSISTOR, 2SA608SP, 2SA1048, 2SA1309, 2SA933S [SR1020]
QU53	4822 130 60588	DIGITAL TRANSISTOR, DTC114ES/ UN4211 [SR1020]
		PU04-MISCELLANEOUS
JU01	4822 267 60274	CONNECTOR, 23P
XU01	4822 242 72194	CERAMIC VIBRATOR, 4.19MHZ
XU02	4822 242 72236	CRYSTAL 32.768KHZ
		PU54-DISPLAY AND SWITCH CIRCUIT BOARD
		PU54-CAPACITORS
CU09	4822 124 80087	ELECT 220μF 6.3V
CU11	4822 122 30043	CERAMIC 0.01μF +80%-20% 50V
		PU54-SEMICONDUCTORS
DU01 ≀ DU08	4822 130 33305	DIODE 1SS176,MA165,1SS254
QU12	4822 130 83519	PHOTO UNIT, RPM-670CBR
		PU54-RESISTORS (COMMON)
R***		CARBON FILM FIXED RESISTOR, ± 5% 1/6W: RU16
		PU54-MISCELLANEOUS
SU01 ≀ SU18	4822 276 20508	PUSH SWITCH
VU01	4822 130 91286	DISPLAY UNIT
		PV04-MAIN FUNCTION CIRCUIT BOARD
		PV04-CAPACITORS
CA01	4822 125 60185	20PF TRIMMING
CA02	4822 122 40306	CERAMIC 0.047μF +80%-20% 50V
CA03	4822 126 11553	CERAMIC 15PF ± 5% 50V
CA04	5322 121 54128	FILM 390 PF ± 5% 50V
CA05	4822 126 10513	CERAMIC 47PF ± 5% 50V
CA06	4822 122 30043	CERAMIC 0.01μF +80%-20% 50V
CA07	4822 122 30043	CERAMIC 0.01μF +80%-20% 50V
CA08	4822 125 60185	20PF TRIMMING
CA09	4822 126 11553	CERAMIC 15PF ± 5% 50V
CA11	4822 122 31349	CERAMIC 68PF ± 5% 50V
CA13	4822 122 30043	CERAMIC 0.01μF +80%-20% 50V
CA18	4822 124 22571	ELECT 10μF 50V
CM01	4822 122 30043	CERAMIC 0.01μF +80%-20% 50V [SR1020]
CM02	4822 122 30043	CERAMIC 0.01μF +80%-20% 50V [SR1020]

REF. DESIG.	PART NO.	DESCRIPTION
CM04	4822 122 30043	CERAMIC 0.01µF +80%-20% 50V
CM05	4822 122 30043	CERAMIC 0.01µF +80%-20% 50V [SR1020]
CM06	4822 122 30043	CERAMIC 0.01µF +80%-20% 50V [SR1020]
CM07	4822 122 30043	CERAMIC 0.01µF +80%-20% 50V
CM08	4822 122 30043	CERAMIC 0.01µF +80%-20% 50V
CN01	4822 124 22571	ELECT 10µF 50V
CN02	4822 124 90357	ELECT 2.2µF 50V
CN03	4822 124 41539	ELECT 47µF 16V
CN04	4822 124 41539	ELECT 47µF 16V
CN05	4822 122 40617	CERAMIC 0.1µF +80%-20% 50V
CV15 ≀ CV20	4822 122 40617	CERAMIC 0.1µF +80%-20% 50V
C201	4822 122 30043	CERAMIC 0.01µF +80%-20% 50V
C202	4822 122 30043	CERAMIC 0.01µF +80%-20% 50V
C203	4822 122 40306	CERAMIC 0.047µF +80%-20% 50V
C204	4822 124 22571	ELECT 10µF 50V
C205	4822 122 40306	CERAMIC 0.047µF +80%-20% 50V
C206	4822 124 22696	ELECT 3.3µF 50V
C207	4822 124 90354	ELECT 100µF 16V
C208	4822 122 40306	CERAMIC 0.047µF +80%-20% 50V
C209	4822 124 41543	ELECT 1µF 50V
C210	5322 122 32072	CERAMIC 33PF ± 5% 50V
C211	4822 124 41543	ELECT 1µF 50V
C212	4822 124 90351	ELECT 0.1 µF 50V
C213	4822 124 22273	ELECT 0.47µF 50V
C214	4822 124 22571	ELECT 10µF 50V
C215	4822 122 40306	CERAMIC 0.047µF +80%-20% 50V
C216	4822 122 30043	CERAMIC 0.01µF +80%-20% 50V
C217	5322 122 32143	CERAMIC 22PF ± 5% 50V
C218	4822 124 90354	ELECT 100µF 16V
C301	4822 124 22696	ELECT 3.3µF 50V
C302	4822 124 22696	ELECT 3.3µF 50V
C305	4822 124 22696	ELECT 3.3µF 50V
C306	4822 124 22696	ELECT 3.3µF 50V
C307	4822 124 90354	ELECT 100µF 16V
C308	4822 124 90354	ELECT 100µF 16V
C403	4822 124 22274	ELECT 4.7µF 50V
C404	4822 124 22274	ELECT 4.7µF 50V
C413	4822 124 41543	ELECT 1µF 50V
C414	4822 124 41543	ELECT 1µF 50V
C415 ≀ C418	4822 124 41539	ELECT 47µF 16V
C421	4822 122 40617	CERAMIC 0.1µF +80 -20% 50V
C501	4822 126 10513	CERAMIC 47PF ±5% 50V
C502	4822 126 10513	CERAMIC 47PF ±5% 50V
C503	4822 124 90354	ELECT 100µF 16V
C504	4822 122 30043	CERAMIC 0.01µF +80%-20% 50V
C505	4822 124 41543	ELECT 1µF 50V
C506	4822 124 90351	ELECT 0.1 µF 50V
C507	4822 122 30043	CERAMIC 0.01µF +80%-20% 50V
C508	4822 124 90354	ELECT 100µF 16V
C509	5322 122 32265	CERAMIC 100PF ± 5% SL 500V
C510	5322 122 32265	CERAMIC 100PF ± 5% SL 500V
C511	4822 122 30043	CERAMIC 0.01µF +80%-20% 50V
C512	4822 122 30043	CERAMIC 0.01µF +80%-20% 50V
C701	4822 124 22274	ELECT 4.7µF 50V
C702	4822 124 22274	ELECT 4.7µF 50V
C705	5322 122 32072	CERAMIC 33PF ± 5% 50V
C706	5322 122 32072	CERAMIC 33PF ± 5% 50V
C707	4822 124 22571	ELECT 10µF 50V
C708	4822 124 22571	ELECT 10µF 50V
C711	4822 126 10797	CERAMIC 10PF 500V
C712	4822 126 10797	CERAMIC 10PF 500V
C713	4822 122 40103	CERAMIC 5PF ± 0.25PF 50V
C714	4822 122 40103	CERAMIC 5PF ± 0.25PF 50V

REF. DESIG.	PART NO.	DESCRIPTION
C717 ≀ C720	5322 122 32265	CERAMIC 100PF ± 5% 500V
C725	4822 124 90354	ELECT 100µF 16V
C726	4822 124 22571	ELECT 10µF 50V
C727	4822 124 90355	ELECT 100µF 50V
C728	4822 124 90355	ELECT 100µF 50V
C729	4822 122 30043	CERAMIC 0.01µF +80%-20% 50V
C730	4822 122 30043	CERAMIC 0.01µF +80%-20% 50V
C801	4822 122 30043	CERAMIC 0.01µF +80%-20% 50V
C802	4822 122 30043	CERAMIC 0.01µF +80%-20% 50V
C803	4822 124 90356	ELECT 1000µF 35V
C804	4822 124 41541	ELECT 470µF 35V
C805	4822 124 22571	ELECT 10µF 50V
C806	4822 124 22274	ELECT 4.7µF 50V
C807	4822 124 22571	ELECT 10µF 50V
C808	4822 124 41539	ELECT 47µF 16V
C809	4822 124 22571	ELECT 10µF 50V
⚠C811	4822 126 12453	CERAMIC 0.01µF +80%-20% 500V
⚠C812	4822 126 12866	ELECT 4700µF 50V
⚠C813	4822 126 12866	ELECT 4700µF 50V
C814	4822 122 30043	CERAMIC 0.01µF +80%-20% 50V
C815	4822 122 30043	CERAMIC 0.01µF +80%-20% 50V
C***		**PV04-CAPACITORS (COMMON)** HIGH DIELECTRIC CONSTANT CERAMIC CAPACITOR 50V: CA12, CV01~CV14, C401,C402, C407, C408, C419, C420, C423, C424, C703, C704, C709, C710
C***		PLASTIC FILM CAPACITOR ONE-WAY TYPE, MYLAR ± 5% 50V: CA15~CA17, C303, C304, C309, C310, C409~C412, C721~C724
		PV04-RESISTORS
RA11	4822 100 11351	10KΩ TRIMMING
RN19	4822 053 11271	270Ω ± 5% 2W
RN20	4822 053 11222	2.2KΩ ± 5% 2W
RN22	4822 053 11271	270Ω ± 5% 2W
R103	4822 052 10109	10 Ω ± 5% 1/6W
R207	4822 052 10101	100Ω ± 5% 1/6W
R211	4822 100 20681	2.2KΩ TRIMMING
R212	4822 100 11352	22KΩ TRIMMING
R313	4822 052 10151	150Ω ± 5% 1/6W
R314	4822 052 10151	150Ω ± 5% 1/6W
R411	4822 052 10151	150Ω ± 5% 1/6W
R412	4822 052 10151	150Ω ± 5% 1/6W
R512	4822 052 10221	220Ω ± 5% 1/6W
⚠R713	4822 050 26809	68Ω ± 5% 1/6W
⚠R714	4822 050 26809	68Ω ± 5% 1/6W
R719	4822 100 11386	1KΩ TRIMMING
R720	4822 100 11386	1KΩ TRIMMING
⚠R725 ≀ ⚠R730	4822 050 26809	68Ω ± 5% 1/6W
⚠R731	4822 053 10221	220Ω ± 5% 1W
⚠R732	4822 053 10221	220Ω ± 5% 1W
⚠R733 ≀ ⚠R736	4822 052 10109	10Ω ± 5% 1/6W
⚠R737	4822 116 82049	0.18 Ω X2 3W
⚠R738	4822 116 82049	0.18 Ω X2 3W
⚠R739	4822 050 26809	68Ω ± 5% 1/6W
⚠R740	4822 050 26809	68Ω ± 5% 1/6W
⚠R743	4822 053 11109	10Ω ± 5% 2W
⚠R744	4822 053 11109	10Ω ± 5% 2W
⚠R745	4822 116 60263	3.3KΩ ± 5% 1W
R747	4822 052 10221	220Ω ± 5% 1/6W
R748	4822 052 10221	220Ω ± 5% 1/6W
R751	4822 053 10331	330Ω ± 5% 1W

REF. DESIG.	PART NO.	DESCRIPTION
R752	4822 053 10331	330Ω ±5% 1W
⚠R801	4822 117 10158	1Ω ±5% 1/4W
⚠R802	4822 117 10158	1Ω ±5% 1/4W
R808	4822 117 10002	2.2KΩ ±5% 1/2W
R809	4822 053 10221	220Ω ±5% 1W
R810	4822 053 11688	6.8Ω ±5% 2W
		PV04-RESISTORS (COMMON)
R***		CARBON FILM FIXED RESISTOR, ±5% 1/6W: RA01~RA04, RA06~RA09, RA10, RA12~RA15, RM01~RM04, RN01~RN18, RN21, RN31, RN32, RV01~RV34, R201~R206, R208~R210, R213~R216, R301, R302, R305~R312, R401~R410, R413, R414, R417, R418, R501~R504, R506~R511, R703~R712, R715~R718, R721~R724, R746, R804~R807, C731
		PV04-SEMICONDUCTORS
DA01	4822 125 50416	VARICAP SVC342-K
DA02	4822 130 33697	DIODE 1SS135
DA03	4822 125 50416	VARICAP SVC342-K
DA04	4822 130 33697	DIODE 1SS135
DA05	4822 130 33305	DIODE 1SS176,MA165,1SS254
DA06	4822 130 33305	DIODE 1SS176,MA165,1SS254
DM01	4822 130 82609	ZENER DIODE MTZJ2.0B [SR1020]
DM02	4822 130 33759	ZENER DIODE 4.7V
DN01	4822 130 80837	DIODE HSS81
DN02	4822 130 80837	DIODE HSS81
DN03	4822 130 32508	DIODE RL103E, DSF-10C
DN04	4822 130 32508	DIODE RL103E, DSF-10C
DN05	4822 130 33305	DIODE 1SS176,MA165,1SS254
D501	4822 130 80317	ZENER DIODE, 5.1V
D701	4822 130 80273	ZENER DIODE, 8.2V
D702	4822 130 80322	ZENER DIODE, 15V
D703 ~ D706	4822 130 33305	DIODE 1SS176,MA165,1SS254
⚠D801 ~ ⚠D806	4822 130 32508	DIODE RL103E/DSF10C
D807	4822 130 80116	ZENER DIODE, 24V
D808	4822 130 33759	ZENER DIODE, 4.7V
⚠D809	4822 130 80091	ZENER DIODE, 12V
⚠D811	4822 130 31007	DIODE S4VB20
QA01	4822 130 42298	TRANSISTOR, 2SC536SP, 2SC2458, 2SC3311, 2SC1740S
QA02	4822 130 42298	TRANSISTOR, 2SC536SP, 2SC2458, 2SC3311, 2SC1740S
QA03	4822 130 61892	TRANSISTOR, 2SD2144S (U, V)
QA04	4822 130 42715	TRANSISTOR, 2SA608SP, 2SA1048, 2SA1309, 2SA933S
QA05	4822 130 42715	TRANSISTOR, 2SA608SP, 2SA1048, 2SA1309, 2SA933S
QM01	4822 209 30193	IC LB1641 [SR1020]
QM02	4822 209 30193	IC LB1641
QN01	4822 130 43233	TRANSISTOR, 2SC2240
QN02	4822 130 43233	TRANSISTOR, 2SC2240
QN03	4822 130 42951	TRANSISTOR, 2SA970
QN04	4822 209 83312	IC TA7317P
QN05	4822 130 42594	DIGITAL TRANSISTOR, DTC144ES/ UN4213
QV01	4822 209 72748	IC LC7821
QV02	4822 209 72748	IC LC7821

REF. DESIG.	PART NO.	DESCRIPTION
QV03	4822 130 60588	DIGITAL TRANSISTOR, DTC114ES/ UN4211
QV04	4822 130 60766	DIGITAL TRANSISTOR, DTA114ES/ UN4111
QV05	4822 130 43819	TRANSISTOR, 2SC2878 (A, -)
QV06	4822 130 43819	TRANSISTOR, 2SC2878 (A, -)
Q201	4822 209 31001	IC LA1851N
Q202	4822 130 62294	TRANSISTOR, 2SC1809S (P)
Q203	4822 130 42715	TRANSISTOR, 2SA608SP, 2SA1048, 2SA1309, 2SA933S
Q204	4822 130 60766	DIGITAL TRANSISTOR, DTA114ES/ UN4111
Q205	4822 126 90006	POSISTOR PTH59F04BH222TS
Q301	4822 209 83631	IC NJM4558D-D
Q401	4822 209 83631	IC NJM4558D-D
Q501	4822 209 30178	IC LC7218
Q502	4822 130 42121	F.E.T. 2SK30A (Y)
Q503	4822 130 42298	TRANSISTOR, 2SC536SP, 2SC2458, 2SC3311, 2SC1740S
Q701	4822 130 42951	TRANSISTOR, 2SA970 (GR, BL)
Q702	4822 130 42951	TRANSISTOR, 2SA970 (GR, BL)
Q703	4822 130 43233	TRANSISTOR, 2SC2240
Q704	4822 130 43233	TRANSISTOR, 2SC2240
⚠Q705	4822 130 60117	TRANSISTOR, 2SC3419 (Y)
⚠Q706	4822 130 60117	TRANSISTOR, 2SC3419 (Y)
⚠Q707	4822 130 62335	TRANSISTOR, 2SD2033 (E)
⚠Q708	4822 130 62335	TRANSISTOR, 2SD2033 (E)
⚠Q709	4822 130 62334	TRANSISTOR, 2SB1353 (E)
⚠Q710	4822 130 62334	TRANSISTOR, 2SB1353 (E)
⚠Q711	4822 130 60697	TRANSISTOR, 2SC3180N (R, O)
⚠Q712	4822 130 60697	TRANSISTOR, 2SC3180N (R, O)
⚠Q713	4822 130 60694	TRANSISTOR, 2SA1263N (R, O)
⚠Q714	4822 130 60694	TRANSISTOR, 2SA1263N (R, O)
Q717	4822 209 83732	IC AN7062
⚠Q801	4822 209 60826	IC NJM7812FA
⚠Q802	4822 209 32514	IC L78MR06
U036	4822 130 33305	DIODE 1SS176,MA165,1SS254
		PV04-MISCELLANEOUS
A101	4822 210 10568	V.H.F.TUNER, FM FRONT END [/1A/1B]
A101	4822 210 10567	V.H.F.TUNER, FM FRONT END [/2A/2B]
FA01	4822 242 81262	CERAMIC FILTER, SFP450F
F201	4822 242 71135	CERAMIC FILTER, SFE10.7MS3-A
F202	4822 242 71135	CERAMIC FILTER, SFE10.7MS3-A
JV01	4822 265 30457	TERMINAL 6P CD/AUX1/AUX2
JV02	4822 265 30397	TERMINAL 4P TAPE IN/OUT
JV03	4822 265 30397	TERMINAL 4P DCC IN/OUT
JV04	4822 266 30274	TERMINAL 2P REMOTE IN/OUT
JV05	4822 267 60273	CONNECTOR 23P
J101	4822 290 81632	TERMINAL ANTENNA
J401	4822 267 30741	TERMINAL 2P PHONO
J701	4822 290 81616	TERMINAL 4P SPEAKER
LA01	4822 157 63084	ANT COIL MW
LA02	4822 157 70779	OSC COIL MW
LA03	4822 157 52714	ANT COIL LW
LA04	4822 157 70781	OSC COIL LW
LA05	4822 157 53589	CHOKE COIL 39MH
LA06	4822 148 81095	I.F.T. AM
⚠LN01	4822 280 70354	RELAY VB24MBU
LN02	4822 280 20469	RELAY SVR-24A
L201	4822 157 63904	I.F.T. FM DET
L202	4822 156 10794	M.P.X.COIL
L301	4822 157 70021	M.P.X.COIL 19.38KHZ
L302	4822 157 70021	M.P.X.COIL 19.38KHZ
L701	4822 157 70022	SPEAKER CHOKE COIL
L702	4822 157 70022	SPEAKER CHOKE COIL

REF. DESIG.	PART NO.	DESCRIPTION
SV01	4822 277 21718	SLIDE SWITCH SYSTEM/INT/EXT
S301	4822 277 21712	SLIDE SWITCH SCAN STEP [/1A/1B]
WV01	4822 321 62189	JUMPER LEAD 23P
X201	4822 242 81248	CERAMIC VIBRATOR, CSB456F15
X501	4822 242 72333	X'TAL 7.2MHZ

REF. DESIG.	PART NO.	DESCRIPTION

NOTE ON SAFETY

Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.